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ABSTRACT

The selections in this collection present common sense approaches to improving the quality of teachers. These approaches involve easing the regulations that control entry, devolving personnel decisions to individual schools, and then holding these schools accountable for producing results as gauged by their students' academic achievement. Some of the reports bring statistical evidence and economic analysis to bear on the problem. One set of reports explores how today's processes actually work, and another set examines four different proposed reforms. The chapters are: (1) "The Teachers We Need and How To Get More of Them: A Manifesto" (Thomas B. Fordham Foundation); (2) "Measuring the Teacher Quality Problem" (Tyce Palmaffy); (3) "Teacher Training and Licensure: A Layman's Guide" (Dale Ballou and Michael Podgursky); (4) "Teacher Licensing and Student Achievement" (Dan D. Goldhaber and Dominic J. Brewer); (5) "Who Gets Hired To Teach? The Case of Pennsylvania" (Robert P Strauss); (6) "Raising the Bar for Pennsylvania's Teachers" (Eugene W. Hickok and Michael B. Poliakoff); (7) "Traditional and Alternative Certification: A View from the Trenches" (Naomi Schaefer); (8) "The National Board for Professional Teaching Standards: Can It Live Up to Its Promise?" (Danielle Dunne Wilcox); (9) "The National Council for Accreditation of Teacher Education: Whose Standards?" (J. E. Stone); (10) "Debating Alternative Teacher Certification: A Trial by Achievement" (Michael Kwiatkowski); and (11) "Value-Added Assessment: An Accountability Revolution" (J. E. Stone). Each chapter contains references. (Contains 9 figures and 18 tables.) (SLD)

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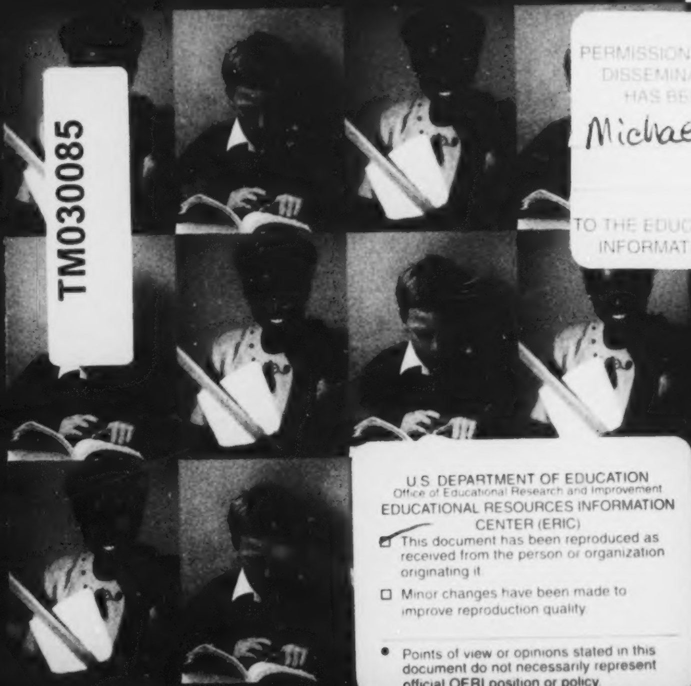

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Better Teachers, Better Schools

Marci Kanstoroom and Chester E. Finn, Jr.
Editors

With a Preface by Eugene W. Hickok
Secretary of Education for Pennsylvania and
Chairman of the Education Leaders Council

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Foreword

Chester E. Finn, Jr.

Practically everyone, it seems, is obsessed with teacher quality. There has long been evidence that U.S. schools don't have enough of the teachers they need and that our quality control mechanisms aren't working well enough. Indeed, the evidence keeps mounting. As this book headed to the printer, for example, the Education Trust released a sophisticated analysis of the state licensure tests that most prospective public-school teachers must pass to enter the profession. The verdict: pitifully weak tests with embarassingly low cutoff scores.

While there is near unanimity that raising the quality of the teaching force is a top priority and a necessary precondition for boosting student achievement, there is less certainty about how to accomplish this. The conventional wisdom holds that tighter regulation of entry is the only way to ensure that all children have qualified teachers. But that wisdom has not served us well; the hoops and hurdles that we make prospective teachers clear have failed to assure their subject matter knowledge, classroom prowess, or success in raising pupil achievement. Why, then, suppose that more hoops and hurdles will yield a different result? Does this not begin to resemble a classic definition of madness?

This book suggests a different way of thinking about this perplexing but important issue, a way of thinking that's grounded in common sense rather than piety and that relies on evidence rather than supposition or wishful thinking. The common sense approach that we propose to boosting teacher quality involves easing back on regulations that control entry, devolving personnel decisions to individual schools, and then holding those schools accountable for producing results as gauged by their pupils' academic achievement. If this "tight-loose" strategy sounds familiar, that's because it has become the dominant paradigm for reforming schools today. We think it warrants consideration for teachers, too.

Until now, policymakers seeking to raise the quality of their teaching force had only one place to turn for guidance: organizations of professional educators, the most prominent of which are the National Commission on Teaching and America's Future and its various affiliates. Upon turning there, however, policymakers found predictable advice: more regulation, greater uniformity, additional time in ed schools, stronger reliance on peer review, etc. Not only is much of this advice self-serving; much of it—as several reports in this volume reveal—is seriously flawed. Among the more troubling flaws is the heavy emphasis that these nostrums place on a particular education philosophy—commonly called progressivism or constructivism—that flies in the face of the academic standards that many states are simultaneously setting for their students and schools.

This book opens with the teacher quality "manifesto" that the Thomas B. Fordham Foundation released in April on behalf of several dozen governors, state education chiefs, prominent scholars and analysts, and veteran practitioners. The manifesto reviews the two approaches to boosting teacher quality and urges the common sense route: simplifying entry and hiring, welcoming diversity, allowing principals to employ the teachers they need, and gauging quality chiefly by student achievement.

The remainder of the volume is divided into three parts. The first set of reports brings statistical evidence and economic analysis to bear on the present regime of teacher certification. The next set explores how today's processes actually work on the ground—from the courses that prospective teachers must take to the criteria used by school districts in making hiring decisions. Finally, our authors analyze a quartet of proposed reforms, two of them beloved by the education profession and two that embody the common sense approach. Included here is (to our knowledge) the first independent analysis ever undertaken of the over-praised National Board for Professional Teaching Standards (NBPTS).

We supply no silver bullet for America's teacher quality problem, but the verdict is clear about the prospects for policies based on the conventional wisdom: they are destined to fail. To us, the alternative seems just as clear. Rather than further tightening of entry requirements, states are well advised to approach the problem by opening up the profession to well-educated individuals with varied backgrounds, providing new teachers with the support they need to succeed in the classroom, freeing school leaders to hire and compensate the people they need, and holding everybody accountable not for what their peers think of their performance but for whether their students actually learn.

Many people contributed to the preparation of this volume, which we are pleased to publish in conjunction with the Education Leaders Council, a small but plucky organization of state education policymakers whose commitment to reform often leads them to embrace promising alternatives to the conventional wisdom. Our thanks to ELC chairman Eugene Hickok, who is also Pennsylvania's crusading Secretary of Education (and a political scientist of no small repute), for authoring the preface that follows.

Dr. Marci Kanstoroom, this Foundation's director of research, shouldered primary responsibility for preparation of this volume: commissioning (or otherwise obtaining) all the essays and studies in it, tirelessly editing them for publication, and overseeing the many projects that fed into this one. She was ably assisted throughout by visiting research fellow Danielle Wilcox, who lent a hand with every aspect of the book while authoring the pathbreaking study of the NBPTS.

The Thomas B. Fordham Foundation is not unique in focusing on teacher quality, and the work of several other organizations has contributed to the strength of this book. Two of the reports included here, J.E. Stone's insightful analysis of NCATE and his primer on value-added assessment, were commissioned by the Foundation Endowment of Alexandria, Virginia and released as policy briefs this spring. We are grateful to the Foundation Endowment for allowing us to include revised versions of the policy briefs in this volume. A longer version of the overview of alternative teacher certification by Michael Kwiatkowski was previously published by the Tomás Rivera Policy Institute of Claremont, California, to which we are similarly indebted.

The Thomas B. Fordham Foundation is a private foundation that supports research, publications, and action projects in elementary/secondary education reform at the national level and in the Dayton area. Further information can be obtained from our web site (www.edexcellence.net) or by writing us at 1627 K Street, NW, Suite 600, Washington, DC 20006. (We can also be emailed through our web site.) This report is available in full on the Foundation's web site, and hard copies can be obtained by calling 1-888-TBF-7474 (single copies are free). The Foundation is neither connected with nor sponsored by Fordham University.

Chester E. Finn, Jr., President
Thomas B. Fordham Foundation
Washington, DC
July 1999

Preface

Eugene W. Hickok

Excellence in public schools depends on setting high standards for student learning and even higher standards for their teachers. Teachers, after all, must enable students to meet rigorous standards of academic achievement. The teacher's task is a difficult one, and only the best and the brightest are capable of fulfilling it. And it is the best and the brightest that public schools must seek and find.

We need bold new ways to attain teacher excellence, for nothing else matters as much. Beautiful school buildings, state-of-the-art technology, and the newest textbooks help the process of learning, but without excellent teaching we are wasting our taxpayers' dollars. We are similarly wasting our money, and, tragically, compromising our children's future, when we continue to turn for a solution to the same teacher-training organizations and institutions that have presided over the unacceptable mediocrity that characterizes too many of the teachers they have trained.

The bold vision of the manifesto is a call to a more logical course of action. Teacher training has been characterized by process—seat time, repetitive educational methods courses, and heavy doses of educational theory. The shibboleths of educational theory have been as changing as the winds—constructivism, new math, open classrooms—and in some cases like whole language, disastrous for children's futures. The manifesto calls for results. It works back from the goal of public schooling, which is the academic training of students, and admits any type of teacher recruitment that can be shown to lead to student learning. Based on results in Texas, Colorado, and New Jersey, we have good reason to expect that alternative certification programs will be powerful tools for recruiting the sort of academically qualified teachers whom research shows to have a direct effect in enhancing student performance. Pennsylvania has recently adopted a strong alternative certification program, and, at the same time, it has made the requirements for traditional teacher training programs rigorous. We embrace both methods; what we must demand of both is results.

The Education Leaders Council was formed by states that no longer accept the conventional wisdom, that no longer have the patience to wait for solutions from teachers' unions and professional teachers' organizations while another generation of schoolchildren fails to reach the levels of achievement that are their birthright. While we are pleased to see that NCATE, the bellwether of teacher training, now intends to accredit institutions based on performance measures, not process, we do not feel that its record yet qualifies it to be an agent of educational reform. Nor do we believe that the National Board for Professional Teaching Standards, for all of the massive infusion of federal and private funding it has received, has a solution for the underpreparedness in academic skills that we all-too-often encounter among licensed public-school teachers.

It is a very happy and auspicious collaboration of the Thomas B. Fordham Foundation and the Education Leaders Council that presents this important manifesto and volume of essays.

As in the children's story of the Emperor's New Clothes, we need to ask ourselves if we have fooled ourselves in thinking that we see results of traditional teacher preparation programs that justify the monopoly that many states give to them for the preparation of licensed teachers. And if we find, as is likely, that alternative paths are equally effective, or more effective, in giving us the teachers we need, then let us not fear success. Let us remember that public schools exist not for their superintendents, principals, teachers, and staff, but for students and student learning.

This manifesto, signed by two governors, and five state secretaries of education, makes me very, very optimistic that real reform of our schools is at hand.

Chapter Summaries

THE TEACHER QUALITY DEBATE

The Teachers We Need and How to Get More of Them: A Manifesto

Everyone agrees that America needs better teachers in the classroom, yet there is little agreement about how to recruit them. The conventional wisdom holds that the key to attracting better teachers is to regulate entry into the classroom ever more tightly: what teachers need is more time in increasingly similar education schools, more graduate training, more pedagogy courses, and less alternative certification. Yet there's no persuasive evidence that the regulatory approach has succeeded in raising teacher quality in the past or that it will do so in the future. What it omits is the commonsensical: the possibility that for teachers, as for the schools in which they teach, the surest route to quality is to widen the entryway, deregulate the processes, and hold people accountable for their results—results judged primarily in terms of classroom effectiveness as gauged by the value a teacher adds to pupils' educational experience. "The Teachers We Need and How to Get More of Them" describes how the "romance of regulation" has failed and outlines a more promising—and commonsensical—alternative.

Measuring the Teacher Quality Problem

Tyce Palmaffy

This overview of recent data on the quality of our nation's teaching force contains much bad, if often familiar, news. No measure of teacher quality is perfect, but most of the measures that do exist are discouraging. Teachers have weak verbal and quantitative skills as measured by various tests. Not nearly enough of them have a college major or minor in the subject that they teach. And only one in five teachers reports feeling prepared to teach in today's classrooms. These findings, combined with U.S. students' poor performance on national and international tests, bring home the urgency of the teacher quality problem.

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Teacher Training and Licensure: A Layman's Guide

Dale Ballou and Michael Podgursky

Concern over the quality of U.S. teachers has renewed interest in the ways they are prepared and licensed. Today's most prevalent prescription for boosting teacher quality follows a regulatory approach: more clinical training, less alternative certification, more rigorous exams of pedagogical knowledge, and universal accreditation of teacher education programs. Podgursky and Ballou conclude that such policies are misguided. The knowledge base upon which the required training would be built is not scientifically grounded. Nor have the self-policing organizations of the education profession proven that they maintain rigorous criteria in assessing teacher performance. Although testing prospective teachers is popular, the choice of a cutoff score is essentially arbitrary and denies schools the opportunity to consider otherwise strong candidates. In light of these drawbacks, the authors suggest that hiring decisions should be vested in local school officials whose opportunity to assess candidates' skills is superior to that of a remote licensing agency. The best policy is to hold schools accountable for their pupils' performance while removing unnecessary encumbrances on their ability to recruit widely and hire the ablest persons they can find to teach their students.

Teacher Licensing and Student Achievement

Dan D. Goldhaber and Dominic J. Brewer

States use licensing to ensure that only qualified teachers can be hired, but loopholes often allow teachers to enter the classroom via alternate routes. Comparing the performance of students whose teachers hold standard certificates with students whose teachers have non-standard credentials is one way to gauge the efficacy of licensing. Using data from the National Educational Longitudinal Study of 1988, this study finds that students whose teachers possess a B.A. or M.A. in math outperform other students in math. Students whose teachers have any kind of certification (standard, emergency, alternative, etc.) outperform students whose teachers have no certification or are certified in a different subject. The authors also report that math and science students whose teachers have emergency credentials do no worse than those whose teachers hold standard teaching credentials.

TEACHER CERTIFICATION UP CLOSE

Who Gets Hired to Teach? The Case of Pennsylvania

Robert P. Strauss

This report takes a close look at teacher preparation and hiring practices in Pennsylvania, and then considers the qualifications of those who ultimately emerge from the process and are hired to teach in the state. It reviews in detail the various factors that conspire to produce a poorly qualified teaching force: low admissions standards for prospective teachers; vague curricular requirements at teachers colleges; low cutoff scores on licensing exams; and misguided (and sometimes questionable) hiring practices that place little emphasis on an applicant's content knowledge. While the weaknesses of preservice teacher training are not unfamiliar, Strauss contends that the flaws in the hiring process itself turn out to be so great that they may overwhelm even an improved preparation system.

Raising the Bar for Pennsylvania's Teachers

Eugene W. Hickok and Michael B. Poliakoff

Pennsylvania's teacher preparation system has long been focused on seat-time in education courses. Governor Tom Ridge's "Teachers for the 21st Century" initiative would revolutionize this system by reshaping traditional teacher education programs and by expanding alternative certification opportunities. This initiative raises the bar for prospective teachers in the Commonwealth: they must now meet higher admissions standards for preparation programs, take more academic courses and fewer education courses, and pass licensure exams with higher scores. College graduates who are academically distinguished and pass the appropriate licensure examinations may teach under the mentorship of a principal or master teacher without attending a school of education. The initiative also requires professional development focused on subject-related coursework. In these ways, Pennsylvania is taking a big step toward ensuring that all of its children have excellent teachers.

Traditional and Alternative Certification: A View from the Trenches

Naomi Schaefer

The stated purpose of state teacher certification and state approval of teacher education programs is to ensure that every public-school child is taught by a qualified instructor. A close look at what these programs entail, however, suggests that they do not reliably accomplish this goal. Case studies of what it takes to become a teacher in California, Ohio, New York, and Minnesota reveal that approved preparation programs tend to have very low entry requirements, no exit requirements, scant subject content, and a surfeit of pedagogical courses of uncertain value. While the requirements are flimsy, they are also numerous. Hence the time and money required to complete such programs probably discourages outstanding candidates from entering teaching. Alternative certification programs have promise, but today they are spotty—some states have none—and uneven in their requirements. States should consider creating more alternate routes to certification and should ensure that these programs do not pose so many obstacles as to undermine their usefulness.

PROPOSED REFORMS UP CLOSE

The National Board for Professional Teaching Standards: Can It Live Up to Its Promise?

Danielle Dunne Wilcox

The National Board for Professional Teaching Standards has been lauded by educators and public officials from the Clinton administration to Republican governors. While the goal of the Board—identifying and certifying master teachers—has broad appeal, in fact the activities and processes of the Board have not been subject to serious evaluation. This pioneering report explores in depth how National Board certification works, from the portfolios submitted by applicants to the training of scorers. After scrutinizing the Board's standards, the validity of its scoring system, and extant research on its effectiveness, Wilcox concludes that the Board's standards and assessments are too flawed to support the claims that are being made on its behalf.

The National Council for Accreditation of Teacher Education: Whose Standards?

J.E. Stone

The National Council for Accreditation of Teacher Education (NCATE) is the largest accreditor of teacher training programs in the U.S., and its standards are fast becoming the de facto national norm. In addition to being a time-consuming and expensive process, however, NCATE accreditation reviews seem more concerned with a school's philosophical perspective than with the qualifications of its faculty and the knowledge of its graduates. Moreover, NCATE's standards downplay the role of teaching in producing student achievement and celebrate the learner-centered approach to pedagogy. These stances put NCATE at odds with what many parents and policymakers want from teachers and the institutions that claim to prepare them.

Debating Alternative Teacher Certification: A Trial by Achievement

Michael Kwiatkowski

The number of teachers who enter the classroom through "alternative" routes is small today, but expected to grow. States and districts increasingly turn to alternative certification to widen the pool of teaching candidates with backgrounds in high-demand specialties, candidates from under-represented groups, or those prepared to teach in challenging settings. Studies show that alternative certification does increase the representation of teachers with these qualities. While existing studies of the effects of these teachers on student achievement have limitations, most researchers have concluded that alternative route teachers are at least as effective as their conventionally trained counterparts, if not more so. This report concludes that, while alternative certification is a promising reform, it will not have a real effect until other issues like teacher salaries and working conditions are also addressed.

Value-Added Assessment: An Accountability Revolution

J.E. Stone

Value-added assessment is a statistical tool for gauging how much students gain in academic achievement in a given year, i.e., how much "value" has been added to the youngsters by their schooling. By aggregating pupil gains by school, value-added assessment can be used to evaluate schools, regardless of differences among entering students. By aggregating scores by teacher, value-added assessment can be used to identify which teacher's students are learning the most and which teacher's students are learning the least. This provides an objective gauge of teacher effectiveness, replacing traditional modes of identifying good teachers via peer review or paper credentials. This report explores a new and sophisticated version of value-added assessment, developed by William Sanders at the University of Tennessee. The author concludes that value-added assessment is revolutionary because it enables parents, taxpayers, and policymakers to see how well schools are doing without penalizing those with many disadvantaged pupils, and it enables teachers to be evaluated based on the most important factor of all: their results.

The Teachers We Need and How to Get More of Them: A Manifesto

This policy statement was released by the Thomas B. Fordham Foundation on April 20, 1999 on behalf of several dozen state officials, prominent education analysts, and veteran practitioners. A list of the original signers appears at the end of the document.

Everyone agrees that America needs better teachers in the classroom, yet there is little agreement about how to recruit them. The conventional wisdom holds that the key to attracting better teachers is to regulate entry into the classroom ever more tightly: what teachers need is more time in increasingly similar education schools, more graduate training, more pedagogy courses, and less alternative certification. Yet there's no persuasive evidence that the regulatory approach has succeeded in raising teacher quality in the past or that it will do so in the future. What it omits is the commonsensical: the possibility that for teachers, as for the schools in which they teach, the surest route to quality is to widen the entryway, deregulate the processes, and hold people accountable for their results—results judged primarily in terms of classroom effectiveness as gauged by the value a teacher adds to pupils' educational experience. "The Teachers We Need and How to Get More of Them" describes how the "romance of regulation" has failed and outlines a more promising—and commonsensical—alternative.

Overview

U.S. schools aren't producing satisfactory results, and this problem is not likely to be solved until U.S. classrooms are filled with excellent teachers. About this, there seems to be a national consensus. How to get from here to there, however, is the subject of far less agreement. Our purpose is to suggest a more promising path than many policymakers and education reformers are presently following.

The good news is that America is beginning to adopt a powerful, commonsensical strategy for school reform. It is the same approach that almost every successful modern enterprise has adopted to boost performance and productivity: set high standards for results to be achieved, identify clear indicators to measure progress towards those results, and be flexible and pluralistic about the means for reaching those results. This strategy in education is sometimes called "standards-and-accountability." It is a fundamental aspect of the charter school movement, and it undergirds many versions of "systemic reform" as well.

The bad news is that states and policymakers have turned away from this commonsensical approach when trying to increase the pool of well-qualified teachers. Instead of encouraging a results-oriented approach, many states and policymakers are demanding ever more regulation of inputs and processes. Other modern organizations have recognized that regulation of inputs and processes is ineffectual and often destructive. There is no reason to believe that it will be anything other than ineffectual as a strategy for addressing the teacher quality problem.

We conclude that the regulatory strategy being pursued today to boost teacher quality is seriously flawed. Every additional requirement for prospective teachers—every additional pedagogical course, every new hoop or hurdle—will have a predictable and inexorable effect: it will limit the potential supply of teachers by narrowing the pipeline while having no bearing whatever on the quality or effectiveness of those in the pipeline. The regulatory approach is also bound, over time, to undermine the standards-and-accountability strategy for improving schools and raising student achievement.

We conclude that the regulatory strategy being pursued today to boost teacher quality is seriously flawed.

A better solution to the teacher quality problem is to simplify the entry and hiring process. Get rid of most hoops and hurdles. Instead of requiring a long list of courses and degrees, test future teachers for their knowledge and skills. Allow principals to hire the teachers they need. Focus relentlessly on results, on whether students are learning. This strategy, we are confident, will produce a larger supply of able teachers and will tie judgments about their fitness and performance to success in the classroom, not to process or impression.

The Problem

We know that better quality teachers make a big difference. We know this from decades of research and from the experience of millions of families. Recent studies in Tennessee, Boston, and Dallas, *inter alia*, find dramatic differences between the performance of youngsters who are assigned the best teachers and those assigned the worst teachers.[1] No matter how well-intentioned it is, school reform will likely falter unless more teachers have the knowledge and skills to help all their students meet high academic standards.

Poor Preparation

Yet many teachers are unready to meet these challenges. According to a recent survey, only one in five teachers feels well prepared to teach to high standards.[2] The head of Teachers College acknowledges that "The nation has too many weak education schools, with teachers, students and curriculums that are not up to the task at hand."[3] Children who face high-stakes tests for promotion and graduation will need instructors with more knowledge and skill than ever before. As many as two million new teachers will need to be hired in the next decade. Yet our present system for recruiting, preparing, and deploying them is not up to the dual challenge of quality and quantity. We are not attracting enough of the best and the brightest to teaching, and not retaining enough of the best of those we attract.[4] A third of U.S. teachers—two-thirds in inner cities—report that *their* schools have difficulty keeping good teachers.[5]

Lack of Subject Matter Knowledge

Perhaps the gravest failing of our present arrangement is the many teachers who lack preparation in the subjects that they teach. While most public school teachers are certified by their states, extensive college-level study in the teaching field is not always a prerequisite for subject area certification.[6] Moreover, teachers are often assigned to courses outside their main teaching field as a cost-saving measure or administrative convenience, because of shortages in advanced subjects such as math and science, or because some schools—such as those in the inner-city—have a high turnover of teachers. "Foreign education ministers who visit me are just stumped when I try to explain this practice," notes Education Secretary Richard Riley. "Their translators simply have no words to describe it."[7]

It appears, for example, that more than half of history teachers have neither majors nor minors in history itself.[8] More than half of the youngsters studying physics have a teacher who has neither a major nor minor in physics. (Is it any wonder that U.S. high-school seniors trail the world when it comes to *their* knowledge of physics?) More troubling still, children attending school in poor and urban areas are least likely to find themselves studying with teachers who *did* engage in deep study of their subjects.

We are not attracting enough of the best and the brightest to teaching, and not retaining enough of the best of those we attract.

Today's regulatory approach to entry into teaching compounds these problems. Because it places low priority on deep subject matter mastery and heavy emphasis on the things that colleges of education specialize in, many teachers get certified without having mastered the content that they are expected to impart to their students.

The Romance of Regulation

For decades, the dominant approach to "quality control" for U.S. teachers has been state regulation of entry into the profession. Requirements vary, but almost everywhere a state license is needed to teach in public schools. To obtain such a license,

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one must complete a teacher education program approved by the state, which typically imposes a host of requirements on these programs.[9] Their students are commonly required to take specific courses (or a set number of courses) in pedagogy, child development, the "foundations of education," "classroom diversity," etc.[10] Some states require a minimum college grade point average for entry into the program, and many require prospective teachers to pass standardized tests of reading, writing, and math skills. It is also common, at some point in the process, to test for knowledge of pedagogy and, sometimes, for knowledge of the subject in which they will be certified (which, as we have seen, may or may not be the subject they end up teaching). In addition, these programs typically require supervised student teaching, which teachers often term the most valuable part of their preparation for the classroom. This approach predictably creates a teacher force that is heavily credentialed in pedagogy, but not in the subject matter they are expected to teach. The regulatory strategy will intensify these trends.

In response to widening concern about teacher quality, most states are tightening the regulatory vise.

More of the Same

Today, in response to widening concern about teacher quality, most states are tightening the regulatory vise, making it harder to enter teaching by piling on new requirements for certification. On the advice of some highly visible education groups, such as the National Commission on Teaching and America's Future, these states are also attempting to "professionalize" teacher preparation by raising admissions criteria for training programs and ensuring that these programs are all accredited by the National Council for the Accreditation of Teacher Education (NCATE). That organization is currently toughening its own standards to make accredited programs longer, more demanding, and more focused on avant-garde education ideas and social and political concerns.

Such measures will centralize and standardize the licensure process even more, curbing diversity in the sources and entry paths followed by teachers and shifting authority from local school boards and state agencies to professional education organizations and standards committees. These groups base their standards and procedures for judging teacher fitness on the principle of peer review, not on proven effectiveness with respect to student learning.

It is no surprise that all this is happening. The regulatory route is public education's traditional solution. Even business groups proposing to improve the quality of teaching offer suggestions that partake of the regulatory mindset. Many vested interests are served and established routines are enhanced by more regulation.

Shortcomings of the Regulatory Strategy

The regulatory strategy that states have followed for at least the past generation has failed. The unfortunate results are obvious: able liberal arts graduates avoid teaching, those who endure the process of acquiring pedagogical degrees refer to them as "Mickey Mouse" programs, and over time the problems of supply and quality have been exacerbated. When a strategy fails, it does not make much sense to do the same thing with redoubled effort. Yet that is what many states are now doing.

The present system does not even do a good job of screening out ill-prepared candidates. While some states have exit exams that appraise the skills, knowledge, and competence of fledgling teachers, in many others "quality control" occurs only at the point of entry into a training program, and entry requirements are low. In a state with no exit exam, completing the list of prescribed courses and earning the requisite degree are all that's needed to get one's teaching certificate. Though many jurisdictions now require future high-school instructors to have majored (or minored) in the subjects that they plan to teach, the content and rigor of their course work are left entirely to the colleges.

> *Teachers should be evaluated based on the only measure that really matters: whether their pupils are learning.*

Where there are exit exams, these often represent a modest intellectual threshold. Tests given to teaching candidates are commonly pitched at so undemanding a level—and their passing scores are so low—that they do little to deter individuals with limited intellectual prowess and scant subject matter knowledge. In Pennsylvania, for instance, passing scores were for many years set so that about 95 percent of everyone taking the tests passed them.[11] Local school boards can then hire whomever they prefer, often for reasons other than their academic qualifications.

Standards Askew

What really makes state regulation of entry into teaching so dysfunctional is not that its standards are low but that it emphasizes the wrong things. The regulatory strategy invariably focuses on "inputs"—courses taken, requirements met, time spent, and activities engaged in—rather than results, meaning actual evidence of a teacher's classroom prowess, particularly as gauged by student learning. It judges one's "performance" by the subjective opinions of other teachers and professors. This is the wrong sort of regulation.

Teachers should be evaluated based on the only measure that really matters: whether their pupils are learning. This is not pie in the sky. William Sanders of the University of Tennessee has developed a technique that uses careful statistical analysis to identify the gains that students make during a school year and then estimate the effects of individual teachers on student progress. This "value-added" technique is extremely precise and its results are statistically robust. Originally used

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only in Tennessee but now spreading to other locales, it allows policymakers, taxpayers, and parents to see for themselves how much teachers are helping students to learn.[12]

The technique has proven to be a powerful tool for evaluating teachers. Sanders finds, for example, that the top 20 percent of teachers boost the scores of low-achieving pupils by 53 percentile points on average, while the bottom 20 percent of teachers produce gains of only 14 percentile points. Researchers in Dallas and Boston have found the same commonsensical link: good teachers significantly boost student achievement, even for the weakest pupils.[13]

Yet few states focus their teacher quality strategies on results. The instruments that states are far likelier to use to assess teaching candidates—input measures, that is—are seriously flawed approximations of how good a teacher one will be. We are struck by the paucity of evidence linking those inputs with actual teacher effectiveness. In a meta-analysis of close to four hundred studies of the effect of various school resources on pupil achievement, very little connection was found between the degrees teachers had earned or the experience they possessed and how much their students learned.[14] Nor is there any evidence that teachers who graduate from NCATE-accredited teacher education programs are more effective than those who do not.[15] Today's regulations, and the additional regulations urged by reformers within the profession, focus on inputs that display little or no relationship to classroom success. This is not education reform. This is the illusion of reform.

Recruiting smarter, abler teachers will do more to improve teaching than requiring more or different preservice training.

Shaky Knowledge Base

The regulatory strategy assumes that good teaching rests on a solid foundation of specialized professional knowledge about pedagogy (and related matters) that is scientifically buttressed by solid research. In reality, however, much of that knowledge base is shaky and conflicted. We should not be surprised that there is no reliable link between pedagogical training and classroom success.

To be sure, the foundation has some sturdy spots. There is a scientific consensus today, for example, about the most effective methods of teaching primary reading to young children.[16] There is strong evidence about the efficacy of such pedagogies as Direct Instruction.[17] Yet much of the surest and best-documented knowledge about education is ignored, even denounced, by many approved teacher education programs, while the lore that they instead impart to new teachers—about favored methods and self-esteem enhancement, for example—has little or no basis in research.[18] Is it any wonder that people mistrust teacher education—or that to rely on it as the exclusive path into U.S. classrooms is to place the next generation of Americans at educational risk? The regulatory approach buttresses an orthodoxy that doesn't work.

The regulatory strategy's reliance on peer review assumes, of course, that good teaching can only be detected via observation by other practitioners. Thus the National Board for Professional Teaching Standards has designed an elaborate method for appraising teacher performance and certifying outstanding teachers. The process is costly and time-intensive. Yet today we have no idea whether the teachers identified as superior by the NBPTS are in fact the best teachers as judged by how much and how well their pupils learn.[19] Here as elsewhere, peer review consists mainly of judging quality by observing inputs and processes, i.e., appraising a teacher's skill in using conventional (and popular) teacher practices.

Discouraging the Best and Brightest

Insofar as there are links between teacher characteristics and classroom effectiveness, the strongest of these involve verbal ability and subject matter knowledge. This has been known since the famed Coleman Report of 1966, when teacher scores on a verbal test were the only school "input" found to have a positive relationship to student achievement.[20] In a recent study conducted in Texas, teacher literacy levels were more closely associated with student performance than other inputs.[21] In an appraisal of Alabama schools, the ACT scores of future teachers were the strongest determinant of student gains.[22] These all suggest that recruiting smarter, abler teachers will do more to improve teaching than requiring more or different preservice training.

Yet outstanding candidates are often discouraged by the hurdles that the regulatory strategy loves to erect. Burdensome certification requirements deter well-educated and eager individuals who might make fine teachers but are put off by the cost, in time and money, of completing a conventional preparation program. One college senior writes, "What discourages us most are the restrictive paths to the classroom and the poor reputation of schools of education—and as a result, of teaching itself....It is the certification process, then, and not a lack of interest, that steers us away from teaching."[23] The best and the brightest of young Americans have other career options and will pursue them if the costs of becoming a teacher are too high. In his February 1999 State of American Education speech, U.S. Secretary of Education Richard Riley urged state policymakers to rethink teacher licensing requirements. "Too many potential teachers," he observed, "are turned away because of the cumbersome process that requires them to jump through hoops and lots of them."[24]

Getting Hired: What You Know vs. Who You Know

What little we know about how those who have been certified actually land a teaching job is troubling. There is accumulating evidence that local school boards show little interest in hiring the most academically qualified applicants.[25] Districts often eschew professional recruiting and screening practices. Instead, they frequently prefer to hire their own high-school graduates after they have become certified in a local education program, a practice which has been found to contribute to lower students' scores on competency and achievement tests.[26]

Few Incentives for Great Teaching

Once teachers have entered the classroom, the regulatory strategy—like all such regimens—prizes uniformity and conformity. Personnel decisions for public schools are made by central office bureaucrats according to strict rules. Assignments are often based on seniority. Rigid salary schedules mean that teacher pay reflects years of experience and degrees earned rather than any measure of performance, and salaries bear no relationship to marketplace conditions in the teaching field. There are few tangible rewards for good teaching. And because quality control focuses on the point of entry, and on-the-job teachers are protected by powerful political interests, there are fewer sanctions for bad teaching. As the NCTAF itself pointed out in *What Matters Most: Teaching for America's Future*, "Hiring and tenure decisions are often disconnected from any clear vision of quality teaching."[27]

> *The time has come to consider radically different policies to boost the quality of teaching in U.S. schools.*

A Common Sense Proposal: Freedom in Return for Results

As Secretary Riley said in February, "We can no longer fiddle around the edges of how we recruit, prepare, retain, and reward America's teachers."[28] The time has come to consider radically different policies to boost the quality of teaching in U.S. schools. In the remainder of this paper, we advance a fresh view of how America can acquire more and better teachers in the years ahead.

Holding Schools Accountable

The teaching profession should be deregulated, entry into it should be widened, and personnel decisions should be decentralized to the school level, the teacher's actual workplace. Freeing up those decisions only makes sense, however, when schools are held accountable for their performance—truly accountable, with real consequences for success and failure. The proper incentives are created by results-based accountability systems in which states independently measure pupil achievement, issue public report cards on schools, reward successful schools, and intervene in or use sanctions against failing schools. In private schools today—and in most charter school programs—schools are held accountable by the marketplace while hiring decisions are made at the building level. Public schools, too, should be accountable in this manner.

Power to the Principals

For principals (or other education leaders) to manage their personnel in such a way as to shoulder accountability for school results, but not only be free to select from a wide range of candidates, they must also have the flexibility to compensate those they hire according to marketplace conditions (and individual performance), and they must be able to remove those who do not produce satisfactory results. Everyone who has studied effective schools attests to the central importance of a cohesive "school team" that shares a common vision, and almost everyone who has studied current teacher personnel systems has witnessed the danger of tying that school team's hands when it comes to deciding who will join (or remain in) it.[29]

Common sense also argues that teachers of subjects in short supply should be paid more than those in fields that are amply supplied, that teachers working in hard-to-staff schools should be paid more than those working in schools with hundreds of applicants for teaching slots, and that outstanding teachers should be paid more than mediocre ones. Yet today, the typical public-school salary schedule (and teachers' union contract) allows for none of these commonsensical practices.

School level managers are in the best position to know who teaches well and who teaches badly.

We look forward to the day when great teachers, teachers in scarce fields, and teachers who shoulder difficult challenges, are paid six-figure salaries. But this is not apt to happen so long as mediocre practitioners and superb instructors are harnessed to the same pay scale.

As for the occasional incompetent teacher, the more freedom a school has in initial hiring, the more flexibility it needs with respect to retention. That's common sense, too. Yet today's school systems typically award tenure after a few years of service; thereafter, teachers are almost never dismissed for ineffectiveness. While teachers should be protected from abusive and capricious treatment at the hands of principals, they cannot be protected from losing their jobs for cause. Union contracts often allow veteran teachers to transfer into a school regardless of their instructional prowess, the school's actual needs, or their impact on the school team. Such policies will need to be changed so that principals can be empowered and made accountable.

School level managers are in the best position to know who teaches well and who teaches badly. They have access to far more significant information than state licensing boards and government agencies. They should be empowered (and, if need be, trained) to appraise each teacher's singular package of strengths and weaknesses rather than having distant bureaucracies decide who should be on their team. Once hired, teachers should be evaluated based on the only measure that really matters: whether their pupils are learning.

A Market Test

The commonsense view acknowledges that there is no "one best system" for preparing and licensing quality teachers. A review of the research on the teacher qualities that affect student outcomes is humbling; lamentably little is known for sure about what makes an effective teacher, when gauged by pupil achievement. This argues against mandating any single path into the profession; education schools certainly ought not monopolize the training of teachers. In any case, teachers regularly report that the best place to learn about good teaching practices is on the job and in the company of other good teachers.

Rather than buttressing an orthodoxy that does not work, the common sense approach embraces pluralism. In a deregulated environment, good teacher education programs will thrive and prosper. Those that do a poor job will not, once they lose the protection that the regulatory monopoly confers on them. Principals should be able to decide for themselves whether to hire teachers who have been trained in certain pedagogical methods and theories.

Principals should be able to decide for themselves whether to hire teachers who have been trained in certain pedagogical methods and theories.

The popularity of such programs as Teach for America, which places liberal arts graduates without formal education course work in public school classrooms in poor rural communities and inner cities, indicates that the prospect of teaching without first being obliged to spend years in pedagogical study appeals to some of our brightest college graduates. Over 3,000 people apply for 500 Teach for America slots each year. Since 1994, more than 3,000 veterans of the armed forces have also made the transition from military to classrooms through the Troops to Teachers program.

Alternative certification programs streamline the classroom entry of more prospective teachers. Such programs normally require a bachelor's degree, passage of a competency test, and an intensive (but compressed) regimen of specialized preparation, often undertaken while on the job. They attract talented and enthusiastic individuals into teaching who might otherwise be lost to this calling. Teachers with alternative certification are more likely to have bachelor's degrees in math and science, two fields with chronic shortages of qualified teachers. They are also more likely to be members of minority groups.[30] Yet the regulatory strategy would shut down such programs or force them to imitate conventional education programs.

Where personnel decisions have been deregulated, schools rush to hire well-educated persons whether or not they possess standard certification. Private schools routinely employ unlicensed instructors, which tends to increase the proportion of their teachers who graduated from selective colleges and gained academic training.[31] In New Jersey, the first state to implement a serious alternative certification program, from 23 to 40 percent of teachers now enter the profession through that route.[32] The few studies of alternative certification that have been done find that students of such teachers perform at least as well as students of conventionally licensed teachers.[33] In New Jersey, alternatively certified teachers also have lower attrition than traditionally certified teachers during their first year and are as likely to stay in the field over time.[34]

Not All Regulations Are Bad

Trading accountability for autonomy does not mean sloughing off all regulation. Every child should be able to count on having a teacher who has a solid general education, who possesses deep subject area knowledge, and who has no record of misbehavior. The state has an obligation to ensure that all prospective teachers meet this minimal standard. Thus states should perform background checks on candidates for teaching positions. To boost the likelihood that those who teach our children are themselves well educated, states should require that teaching candidates have at least a bachelor's degree in some academic subject.

States should also ensure subject matter competence. There are two ways to do this: requiring teachers to major in the subjects they teach or requiring them to pass challenging tests of subject matter knowledge. Neither method is perfect. Obliging all teachers to major in the subject they will teach may–regrettably–set the bar too low. At some universities, one can graduate as a history major without learning much of the history we'd expect a high-school history teacher to have mastered. The same is true of other academic majors. And a minor is unlikely to reflect any subject mastery. On the other hand, a prospective teacher who graduates in, say, American studies may have learned ample history or literature to be an outstanding history or English teacher, even though his diploma doesn't actually say "history" or "English."

Trading accountability for autonomy does not mean sloughing off all regulation.

Such variation in college majors tempts us to embrace testing as a more reliable measure of preparedness to teach. The value of any test, however, hinges on its content, rigor, and passing score. Our instinct is to set those cutoffs as high as possible. But since tests are an imperfect gauge of teaching ability, some applicants will fail the test yet possess superior teaching potential. We all know individuals whose other qualities would cause them to be effective with children even if they do poorly on a paper-and-pencil test of knowledge. That is why we are wary of putting all the education eggs in the testing basket or making a certain fixed score an absolute prerequisite to being hired.

Neither academic majors nor subject test scores is a faultless means of assuring that teachers possess the requisite knowledge and will be good at delivering it. But either strategy is superior to today's widespread disregard of subject matter mastery.

Putting Principles into Practice

The commonsense strategy for improving teacher quality is surprisingly straightforward: states should empower principals to employ teachers as they see fit, and then hold those principals to account for their schools' results. Since every regulation that restricts entry to the profession excludes some potentially good teachers from public education, regulation should be reduced to the bare minimum.

What would state policies look like if based on these assumptions? Four are key.

1. **States should develop results-based accountability systems for schools and teachers as well as students.**

States should have accountability systems operating at the student, classroom, and building levels. School level accountability involves measuring pupil achievement and issuing report cards for schools. Such information should be disseminated to students, parents, and the public. States should reward successful schools and should have—and use—the authority to reconstitute or otherwise intervene in failing schools. They may also institute market-based accountability via various forms of school choice.[35] States must also define the role that school districts will play in these accountability systems.

Principals need accountability, too. Their jobs and salaries ought to be tied to their schools' performance. But they need the information by which to hold their faculty and staff accountable. The state can help by providing student achievement data, disaggregated by teacher, like those generated by the value-added system that William Sanders developed for Tennessee.

2. **States should empower school level administrators with the authority to make personnel decisions.**

Authority must accompany accountability. All key personnel decisions (including hiring, promotion, retention, and compensation) should be devolved to schools. Quality control should be the responsibility of school leaders, who have freedom to hire from a wide pool of teaching candidates and pay teachers based on marketplace conditions or individual performance. States should pass whatever legislation is needed to assign all these decisions to the school level.

> *States should ensure that new teachers are adequately grounded in the subject matter they are expected to teach, either by requiring that they major in the subject(s) that they will teach or by mandating rigorous subject matter examinations.*

Teacher tenure ought not be allowed to interfere. Multi-year contracts are far preferable. It must be possible to remove incompetent teachers at reasonable cost and within a reasonable period of time, without sacrificing their right to due process protection against capricious and *ad hominem* treatment.

States should encourage differential pay so that schools can pay outstanding teachers more. It should also be possible to adjust teacher pay for labor market conditions, subject specialty, and the challenge of working in tough schools. A flexible salary structure would allow paychecks to respond to marketplace signals while creating financial incentives for excellent teaching and practical sanctions for poor teaching.

To work well, this system obviously requires capable principals—education leaders who know how to judge good teaching and are prepared to act on the basis of such evaluations. We're not naive about the supply of such people in management positions in public education today. But they exist in large numbers in U.S. society and can be drawn into the schools if the incentives are right. Executive training for some current principals will also help them handle this difficult evolution of their role.[36]

3. **States should enforce minimal regulations to ensure that teachers do no harm.**

   States should perform background checks for all teaching candidates and require prospective teachers to have a bachelor's degree in an academic field. They should also ensure that new teachers are adequately grounded in the subject matter they are expected to teach, either by requiring that they major in the subject(s) that they will teach or by mandating rigorous subject matter examinations. (They may be wise to use both mechanisms and also let principals make exceptions when other compelling evidence is at hand.)

4. **States should open more paths into the classroom, encourage diversity and choice among forms of preparation for teaching, and welcome into the profession a larger pool of talented and well-educated people who would like to teach.**

   Policymakers should take forceful action to eliminate monopoly control and challenge "one best system" attitudes toward teacher preparation. Traditional training programs should be closely scrutinized for their length, cost, burden, and value. Is a two-year time commitment really necessary, for example? States should publish detailed factual information about individual programs and their graduates, data that outsiders can use to evaluate their effectiveness. Information about the effectiveness of recent graduates (as measured by the value-added achievement scores of their pupils) should be made public; until this is available, institution-specific data should include the placement rate of graduates and the percentage of graduates passing state teacher tests. (Some of this information was mandated by the Higher Education Amendments of 1998.)

> *States should expand the pool of talented teaching candidates by allowing individuals who have not attended schools of education to teach.*

   States should expand the pool of talented teaching candidates by allowing individuals who have not attended schools of education to teach, provided that they meet the minimum standards outlined above. States should encourage programs that provide compressed basic training for prospective teachers. States should also attract outstanding college graduates to the profession by using financial incentives such as scholarships, loan forgiveness programs, and signing bonuses.

Conclusion

For too long, policymakers have focused overmuch on training teachers and not enough on recruiting them. They have tackled the quality problem by increasing regulation and expanding pedagogical requirements, even though this approach shrinks the pool of candidates while having scant effect on their quality. Forty years of experience suggests that this strategy is a failure. It cannot work. Indeed, it has compounded today's dual crisis of teacher quality and quantity.

We offer something different. States that reduce barriers to entry will find not only that their applicant pool is larger but also that it includes many more talented candidates. Turning our back on excessive and ill-conceived regulations and focusing instead on student outcomes is the key. To attract and keep the best teachers, states must also be willing to pay strong teachers well—and to muster the necessary resources to do this.

Raising the quality of the U.S. teaching force is an urgent priority today and some policymakers have begun to signal their receptivity to change. In his February 1999 State of American Education speech, for example, Secretary Riley proclaimed, "We must make sweeping efforts to make teaching a first-class profession. And, then, we must hold schools accountable for results."[37] He later added, "What else can we do? We can create rigorous alternative paths to give many more Americans the opportunity to become a teacher."[38] We agree.

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[1] William L. Sanders and Joan C. Rivers, "Cumulative and Residual Effects of Teachers on Future Student Academic Achievement," 1996; Heather Jordan, Robert Mendro, & Dash Weerasinghe, "Teacher Effects on Longitudinal Student Achievement," 1997; and Boston Public Schools, "High School Restructuring," 9 March 1998. These research studies were all cited in Kati Haycock, "Good Teaching Matters a Lot," *Thinking K-16*, A Publication of The Education Trust, 3, no. 2 (1998).

[2] National Center for Education Statistics, *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers* (Washington, D.C.: U.S. Department of Education, January 1999), iii.

[3] Arthur Levine, "Dueling Goals for Education," *The New York Times*, 7 April 1999, A23.

[4] Although teacher "literacy" levels mirror those of other college graduates, that's not actually saying much; more than 40 percent of teachers scored below "level 4" on the 1992 National Adult Literacy Survey (NALS), a national assessment of prose literacy, document literacy, and quantitative literacy among adult Americans. For the study, a random sample of U.S. adults were surveyed and, based on their performance on a set of literacy tasks, graded as level 1 through level 5. Individuals scoring at level 4, for example, display the ability to state in writing an argument made in a lengthy newspaper article (prose literacy), use a schedule to determine which bus to take in a given situation (document literacy) and use an eligibility pamphlet to calculate how much money a couple would receive as supplemental security income (quantitative literacy). More than 40 percent of teachers (and of the general population) scored below this level on the national assessment. See Barbra A. Bruschi and Richard J. Coley, *How Teachers Compare: The Prose, Document, and Quantitative Skills of America's Teachers* (Princeton, N.J.: Educational Testing Service, 1999).

[5] Carol A. Langdon, "The Fifth Phi Delta Kappa Poll of Teachers' Attitudes Toward The Public Schools," *Phi Delta Kappan*, 80, no. 8 (April 1999): 615.

[6] Teacher certification and teacher licensure are used interchangeably throughout this essay.

[7] Richard W. Riley, U.S. Secretary of Education, "New Challenges, A New Resolve: Moving American Education Into the 21st Century," Sixth Annual State of American Education Speech, Long Beach, Calif., 16 February 1999.

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[8] Diane Ravitch, "Lesson Plan for Teachers," *Washington Post*, 10 August 1998. These numbers can be difficult to pin down since the NCES sometimes includes teachers who major in history education as having majored in history.

[9] To be sure, not all teachers pass through conventional teacher-training programs. Some obtain temporary or emergency licenses that allow them to teach before they have completed all of the normal requirements for certification. These are normally issued when districts have urgent needs for teachers that they say they cannot meet with conventional candidates. Some states also offer alternative certification routes which allow liberal arts graduates, military retirees, and others to teach without having to complete a full-length teacher education program. Often, however, the "alternative" programs simply defer the conventional requirements; the individual may begin teaching but may not continue without taking the standard courses, etc. In any case, the intensified regulatory approach outlined in the text would curb the use of alternative programs unless they conform closely to the model of conventional programs.

[10] The number of required units varies from 6 semester units in Texas to 36 in some states. C. Emily Feistritzer and David T. Chester, *Alternative Teacher Certification: A State-by-State Analysis 1998-99* (Washington, D.C.: National Center for Education Information, 1998).

[11] Teaching candidates needed to answer correctly only a quarter of the questions in the reading section of the National Teacher Exam in order to pass it. For a decade, the state set no minimum scores at all in chemistry and physics; every applicant who took one of these tests passed. Robert P. Strauss, "Who Gets Hired to Teach? The Case of Pennsylvania," in *Better Teachers, Better Schools* (Washington, D.C.: Thomas B. Fordham Foundation, 1999).

[12] Organizing an education system on the basis of student achievement requires better measures of student achievement than most states have today (in particular, annual assessments of students in every grade), though a number of jurisdictions are moving in that direction. Implementing the principles of this "manifesto" will mean more such movement. We also recognize, of course, that student test scores can never be a full or perfect measure of teacher effectiveness; teachers add many valuable things to students that cannot be captured by any test.

[13] Kati Haycock, "Good Teaching Matters a Lot," *Thinking K-16*, A Publication of The Education Trust, 3, no. 2 (1998).

[14] Eric A. Hanushek, "Assessing the Effects of School Resources on Student Performance: An Update," *Educational Evaluation and Policy Analysis*, 19, no. 2 (Summer 1997): 141-164.

[15] Dale Ballou and Michael Podgursky, "The Case Against Teacher Certification," *The Public Interest* (Summer 1998): 17-29.

[16] Louisa Cook Moats and G. Reid Lyon, "Wanted: Teachers with Knowledge of Language," *Topics in Language Disorders* (February 1996).

[17] Some teachers object to "D.I." methods, but the evidence indicates that they're effective. See American Institutes for Research, *An Educators' Guide to Schoolwide Reform* (Washington, D.C.: Educational Research Service, 1999) 4, C12-C18 and Debra Viadero, "A Direct Challenge," *Education Week*, 17 March 1999, 41-43.

[18] William Damon, *Greater Expectations* (New York: Free Press, 1995).

[19] The NBPTS reports that a study examining the effectiveness of its standards is underway.

[20] Christopher S. Jencks, "The Coleman Report and the Conventional Wisdom," in Frederick Mosteller and Daniel P. Moynihan, eds., *On Equality of Educational Opportunity* (New York: Random House, 1972), 101.

[21] Ronald F. Ferguson, "Can Schools Narrow the Black-White Test Score Gap?" in Christoper Jencks and Meredith Phillips, eds., *The Black-White Test Score Gap* (Washington, D.C.: Brookings Institution, 1998).

[22] Ronald F. Ferguson and Helen F. Ladd, "How and Why Money Matters: An Analysis of Alabama Schools," in *Holding Schools Accountable: Performance Based Reform in Education* (Washington, D.C.: Brookings Institution, 1996).

[23] Elizabeth Greenspan, "No Thanks," *Teacher Magazine* (April 1999).

[24] Richard W. Riley, "New Challenges, A New Resolve."

[25] See Dale Ballou, "Do Public Schools Hire the Best Applicants," *Quarterly Review of Economics* (February 1996): 97-134 and Dale Ballou and Michael Podgursky, "Recruiting Smarter Teachers," *Journal of Human Resources* (Winter 1995): 326-338.

[26] See Robert P. Strauss, Lori Bowes, Mindy Marks, and Mark Plesko, "Improving Teacher Preparation and Selection: Lessons from the Pennsylvania Experience," *Economics of Education Review*, forthcoming.

[27] National Commission on Teaching and America's Future, *What Matters Most: Teaching for America's Future* (New York: National Commission on Teaching and America's Future, September 1996), 14.

[28] Richard W. Riley, "New Challenges, A New Resolve."

[29] The importance of the power to remove teachers is emphasized by the most mainstream research in the field. Gordon Cawelti, former Executive Director of the Association for Supervision and Curriculum Development, concludes in a recent study of what makes schools effective: "A school seeking a turnaround in student performance must seek out teachers who want to work in such an environment. A school must also be able to remove teachers who are unwilling to commit the energy and dedication needed to make sure that a productive and challenging education is provided to all children who attend. This policy issue must not be overlooked. Without committed teachers, you are unlikely to raise student achievement significantly." Gordon Cawelti, *Portraits of Six Benchmark Schools: Diverse Approaches to Improving Student Achievement* (Arlington, Va.: Educational Research Service, 1999), 64-65.

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[30] Jianping Shen, "Has the Alternative Certification Policy Materialized Its Promise? A Comparison Between Traditionally and Alternatively Certified Teachers in Public Schools," *Educational Evaluation and Policy Analysis*, 19, no. 3 (1997): 276-283.

[31] Dale Ballou and Michael Podgursky, "Teacher Training and Licensure: A Layman's Guide," in *Better Teachers, Better Schools* (Washington, D.C.: Thomas B. Fordham Foundation, 1999).

[32] Ibid.

[33] Stephen D. Goebel, Karl Ronacher, and Kathryn S. Sanchez, *An Evaluation of HISD's Alternative Certification Program of the Academic Year: 1988-1989* (Houston: Houston Independent School District Department of Research and Evaluation, 1989), ERIC Document No. 322103. Susan Barnes, James Salmon, and William Wale, "Alternative Teacher Certification in Texas," paper presented at the annual meeting of the American Educational Research Association, March 1989. [ERIC Document No. 307316.]

[34] Ellen Schech, director, Alternate Route Program, New Jersey Board of Education, in "No Thanks," *Teacher Magazine* (April 1999).

[35] How extensive a school choice policy will be is determined primarily by state laws and constitutions—and of course by politics. The more choice the better—including, where possible, private schools—is the view of most signers of this manifesto. Some signers, however, believe that publicly funded choice should extend only to publicly accountable schools.

[36] Many signers of this manifesto are concerned that today's school administrators—at the building and central office levels alike—often lack the necessary skills and experience to make sensitive personnel decisions based on student performance and other indicators of effectiveness. A state moving in the direction mapped by this manifesto would probably be wise to include this type of in-service training for its current principals, superintendents, etc.

[37] Richard W. Riley, "New Challenges, A New Resolve."

[38] Ibid.

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Measuring the Teacher Quality Problem

Tyce Palmaffy

This overview of recent data on the quality of our nation's teaching force contains much bad, if often familiar, news. No measure of teacher quality is perfect, but most of the measures that do exist are discouraging. Teachers have weak verbal and quantitative skills as measured by various tests. Not nearly enough of them have a college major or minor in the subject that they teach. And only one in five teachers reports feeling prepared to teach in today's classrooms. These findings, combined with U.S. students' poor performance on national and international tests, bring home the urgency of the teacher quality problem.

Introduction

The papers in this volume share an assumption that the nation's education system is suffering from a dearth of intelligent, knowledgeable, skilled teachers. Whether this is true, however, is a hotly contested issue. The disagreement boils down to a question of whether the tools we use to measure teacher quality, from teachers' standardized test scores to student performance, actually capture the essence of good teaching.

Let me illustrate with an anecdote from my own schooling. No teacher in high school frustrated me more than my tenth-grade English teacher. There was just no pleasing him; if you did four drafts of a paper, he always wanted a fifth. His criticisms of our work were harsh but intelligent; from them we learned how to write and think about literature. I worked harder that year than ever before—and learned more as well.

The following year's English class was a breeze. My kind, easygoing eleventh-grade teacher hardly ever tested our knowledge, gave high marks to nearly everyone, and rarely assigned homework. In short, she was the kind of teacher you adored at the time and cursed forever after. I learned almost nothing that year; my writing skills and work habits atrophied.

Although my two teachers may have looked similar on paper, one was clearly better than the other. This is because good teachers possess a mixture of characteristics that we can't always quantify: patience, enthusiasm, inspiration, creativity, and, above all, a passion for the subjects they teach and for teaching itself. They care deeply about whether their students succeed. The best of them elicit the very best from their students; like good parents, they instill self-motivation. Few of these qualities, unfortunately, show up in the statistics we use to measure teacher quality.

There are, however, other, equally important qualities that we can observe with the help of data—attributes such as how literate and intelligent teachers are, how well they know the subjects they teach, and how well prepared they feel. It's reasonable to assume that high quality teachers will possess the strong verbal and quantitative skills needed to recognize and correct the weak verbal and quantitative skills of their students, will possess a deep body of knowledge about the subjects they teach, and will feel ready to teach what they know. The ultimate measure of teacher quality, of course, is the achievement of their students and the value that a teacher adds. But because factors such as home life, cultural attitudes, curricula and textbooks, and the structure of the education system itself also influence achievement, statistics related to student performance are only a rough measure of teacher quality, and thus should be interpreted with care. What follows is a survey of the various ways in which it is possible to measure teacher quality. Its purpose is to discover whether there is a problem and, if so, what its extent is.

General Academic Ability

When nearly 60 percent of would-be teachers failed to pass Massachusetts's teacher certification test in April 1998, much of the public began to wonder whether schools of education are imparting even rudimentary academic skills to the future instructors who pass through them. As several papers in this volume make clear, strong verbal and quantitative skills among teachers improve student performance. This has been demonstrated by research. It also makes intuitive sense: How can one improve students' writing, reasoning, and arithmetic skills if one does not oneself possess superior writing, reasoning, and arithmetic skills?

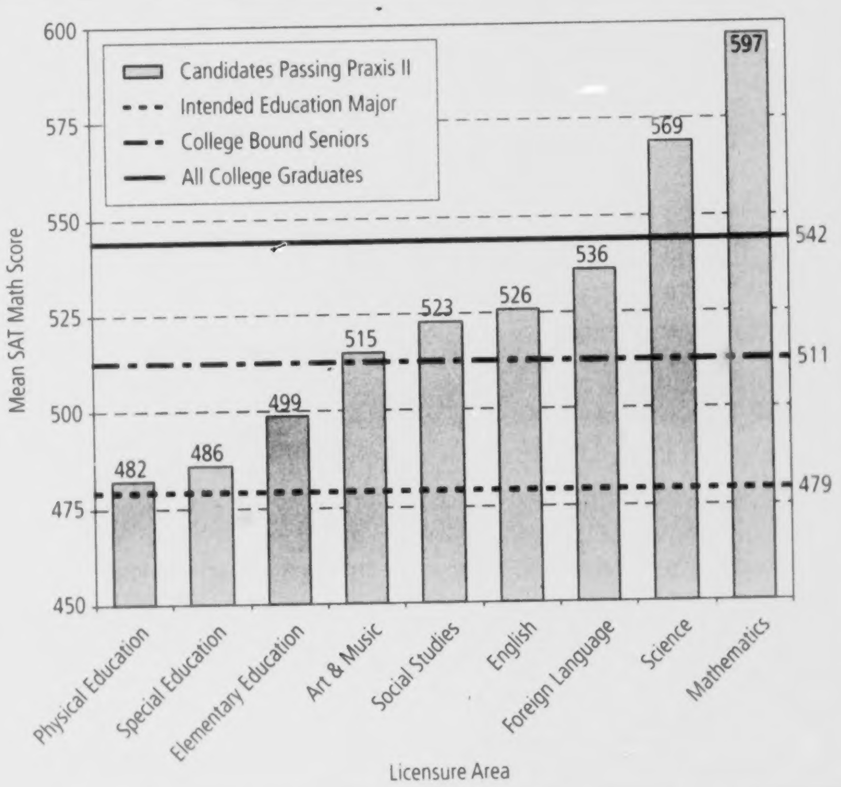
Good teachers possess a mixture of characteristics that we can't always quantify: patience, enthusiasm, inspiration, creativity, and, above all, a passion for the subjects they teach and for teaching itself.

At almost every checkpoint along the path to becoming a teacher, however, college graduates who score higher on standardized tests tend to abandon teaching at higher rates than lower-scoring students. Or, as a group of Harvard researchers put it in *Who Will Teach?*: "[C]ollege graduates with high test scores are less likely to become teachers, licensed teachers with high test scores are less likely to take teaching jobs, employed teachers with high test scores are less likely to stay, and former teachers with high test scores are less likely to return."[1]

Among high-school students who took the Scholastic Aptitude Test in 1994-95, those who intended to study education in college scored lower on both the verbal and math sections than students expressing an interest in any other field.[2] In the course of working toward their degrees, however, students often change majors and, in some cases, fail to graduate. Researchers have found that the average SAT and ACT scores of potential teacners who actually passed the Praxis I exam, administered by twenty-two states to students seeking admission to colleges of education, were equal to or slightly higher than the average scores of college-bound seniors.[3]

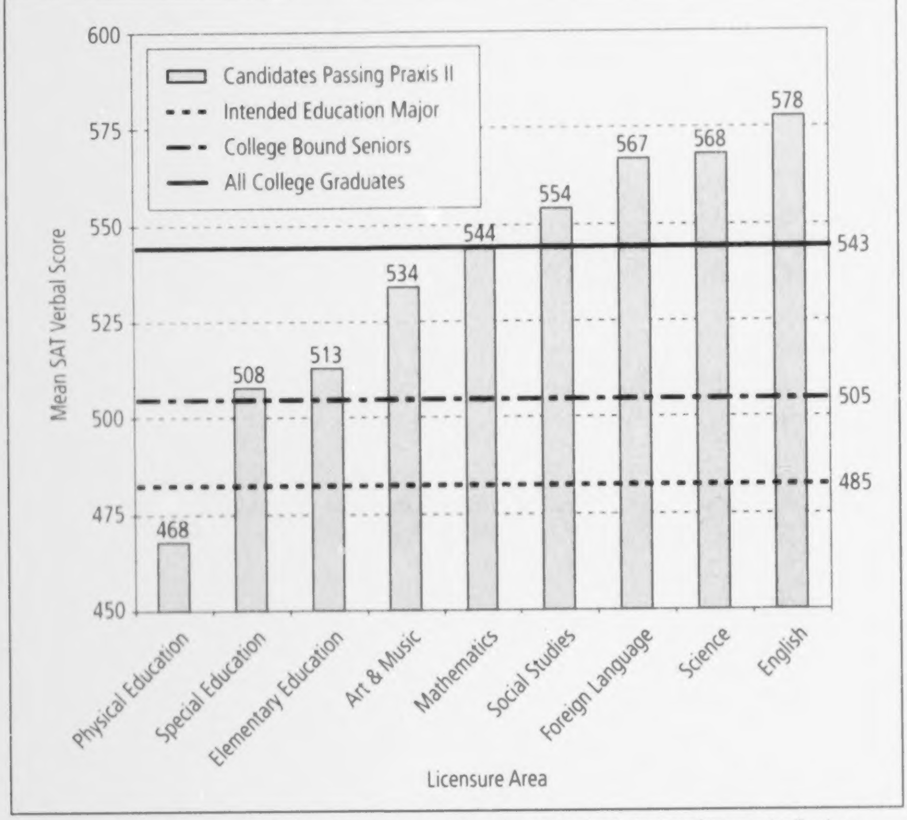
But the same study (whose authors are themselves staff members of ACT, Inc. and the Educational Testing Service, which develops both the SAT and Praxis tests) also found that potential teachers who passed the Praxis II exam, which thirty states use to grant initial teaching licenses, scored significantly lower on the SAT than their fellow college graduates. The study also revealed a sharp divide within the teaching corps. As Figures 1 and 2 show, teachers who passed the Praxis II in specific content areas such as science or English actually had higher average math and verbal scores than all college graduates, while teachers who pursued licenses in nonacademic sub-

Figure 1: Mean Math SAT Scores for Candidates Passing Praxis II by Licensing Area



Source: Drew H. Gitomer, Andy S. Latham, and Robert Ziomek, *The Academic Quality of Prospective Teachers: The Impact of Admissions and Licensure Testing* (Princeton, N.J.: Educational Testing Service, May 1999), 27.

Figure 2: Mean Verbal SAT Scores for Candidates Passing Praxis II by Licensing Area



Source: Drew H. Gitomer, Andy S. Latham, and Robert Ziomek, *The Academic Quality of Prospective Teachers: The Impact of Admissions and Licensure Testing* (Princeton, N.J.: Educational Testing Service, May 1999), 28.

jects such as elementary education and physical education had much lower average scores than college graduates overall.

The ETS/ACT study's findings are borne out by the fact that, in 1992-93, 30 percent of graduating education majors scored in the bottom quartile on their college entrance exams, versus 18 percent of humanities majors and 14 percent in math, computer science, and natural sciences. Education majors were more likely to be in the bottom quartile and less likely to be in the top quartile than any other major.[4]

Other evidence of teachers' weak verbal and quantitative skills comes from the Graduate Record Examinations required to enter graduate school. In 1987-88, education majors earned an average score of 462 on the general test; the average for all test-takers was 554. Students taking the GRE to prepare for graduate work in education (undergraduate education majors and nonmajors alike) scored worse than students intending to study any other field. Undergraduate education majors who intended to do graduate work in education earned the lowest scores of all.[5]

Once they have graduated from college, high-scoring students continue to be driven away from teaching at a faster rate than their low-scoring peers. In a study of teachers licensed in North Carolina from 1975 to 1982, a team of Harvard researchers found that those with high scores on the National Teacher Examination were less likely to enter teaching within three years of being licensed than teachers with low NTE scores[6]; that teachers with high NTE scores left teaching sooner than those with low NTE scores[7]; and teachers with high NTE scores were less likely to return to teaching within five years of leaving than teachers with low NTE scores.[8] Another study found that, among those 1992-93 college graduates who had actually taught, 18 percent had college entrance exam scores in the top quartile of scores. And teachers who expected still to be teaching in two years were almost twice as likely to be in the bottom quartile as those teachers who expected to change careers.[9] Considering that about a third of all teachers leave the field within five years of beginning to teach (a number that rises to one-half for teachers in high-poverty schools), the likelihood that teachers who leave are also the most academically talented individuals is even more disturbing.

Four million students a year are taught English, math, or history by teachers who have neither college majors nor minors in the subject they're teaching.

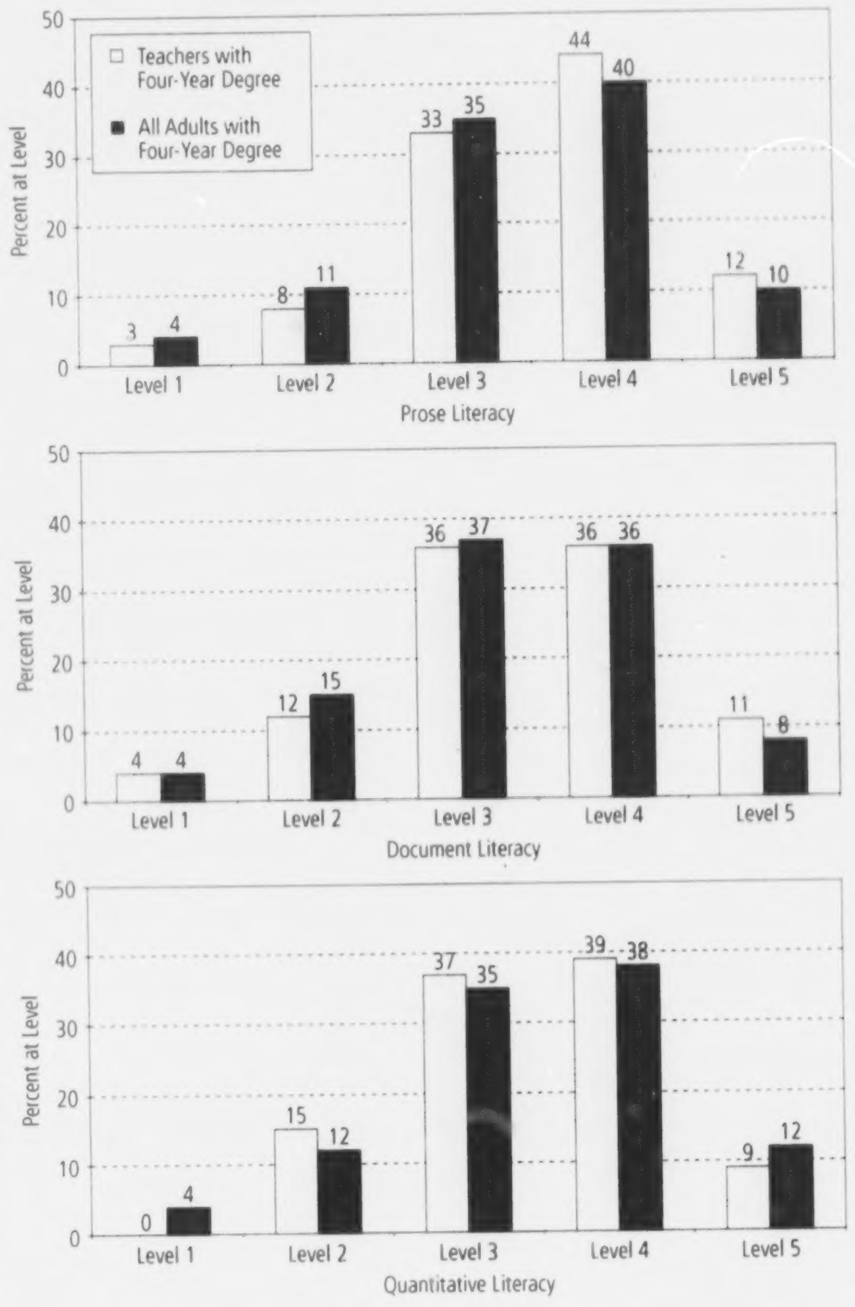
Although teachers fare less well than other professionals on standardized tests such as the SAT and the GRE, there is evidence that they are no less literate than other college graduates and far more literate than the adult population in general.[10] Using data from the National Adult Literacy Survey, ETS compared teachers with other college-educated adults and found that teachers performed equally well on all three literacy tests included in the NALS (see Figure 3). Yet only about 50 percent of teachers scored at or above Level 4 (Level 5 being highest) on prose, document, and quantitative literacy. Surely it's comforting that teachers are not less literate than other college-educated adults, but how satisfied should we be by this evidence? It indicates, after all, that just half the nation's teachers can summarize an argument made in a lengthy newspaper article; use a bus schedule correctly; and use information from a newspaper article to determine how much money should go to raising a child. The other half cannot function at this level. Yet they are teaching our children.

Subject Area Knowledge

In terms of credentials, teaching is one of the most-schooled professions. Virtually all teachers have bachelor's degrees and 45 percent have master's degrees, too. Some are in academic subjects, but more frequently, they are in education.

More important than degrees earned is the amount of education that teachers have had in the subjects they teach. It would be best for a high-school physics teacher to have majored in physics, and for a history teacher to have majored in history. What percentage of teachers have degrees in the subjects they are teaching? Depending

Figure 3. Literacy Levels of Teachers with a Four-Year Degree Compared to Those of All Adults with a Four-Year Degree



Source: Barbara A. Bruschi and Richard J. Coley, *How Teachers Compare: The Prose, Document, and Quantitative Skills of America's Teachers* (Princeton, N.J.: Educational Testing Service, 1999), 6.

on how one defines "in-field" teaching, the picture can look more or less rosy. In grades 9 through 12, more than 90 percent of English, math, science, social studies, and foreign language teachers possess either an undergraduate or graduate major or minor in their main teaching assignment.[11]

But looking at teachers' main teaching assignments papers over what policymakers have called education's "dirty little secret": the widespread practice of asking teachers to teach some classes far distant from their specialties—for instance, an English teacher teaching a math class. By modifying the definition of "out-of-field" teaching to include teachers who taught any classes in subjects in which they had neither a major or minor, University of Georgia sociologist Richard Ingersoll has found more disturbing trends.[12]

Of secondary-school teachers (grades 7-12) who actually taught math, Ingersoll reports that about a third did not major or minor in math, math education, or related fields such as physics or engineering. About a quarter of secondary-school English teachers did not major or minor in English, reading education, or related fields such as literature, speech, or journalism. One-fifth of social studies teachers had no major or minor in any social science, public affairs, social studies education, or history. One-fifth of science teachers didn't major or minor in any of the sciences or in science education. When broken down further, more than half of teachers in the physical sciences (chemistry, physics, earth science, or space science) did not major or minor in any of the physical sciences. More than half of all history teachers did not major or minor in history. (Whatever happened to the old saw that the only thing history majors can do is teach history?) The impact of this is felt widely: four million students a year are taught English, math, or history by teachers who have neither college majors nor minors in the subject they're teaching.

Just half the nation's teachers can summarize an argument made in a lengthy newspaper article.

If this practice were only happening in middle schools, it might not be so harmful. It is perhaps debatable whether one really needs to have majored in a college science to teach seventh-graders. As Table 1 shows, however, Ingersoll found a whopping 41 percent of twelfth-graders being taught one of the physical sciences by out-of-field teachers, as are 61 percent of twelfth-graders in history classes and 14 percent of twelfth-graders in English. In general, though, middle schoolers fare worse when it comes to out-of-field teaching: 74 percent of them are taught physical science by teachers with no major or minor in physical science; the corresponding percentages in English and math are 32 percent and 49 percent.

Out-of-field teaching varies not only by grade but also by poverty level and what track a student is in. In high poverty schools, 43 percent of math teachers had no major or minor in math-related fields, versus 27 percent in low poverty schools. Similarly, in most subjects, students in low tracks are assigned to out-of-field teachers at higher rates than students in high tracks; 25 percent of low-track children are

Table 1: Percentage of Public Secondary School (Grades 7-12) Students in Each Field Taught by Teachers Without a Major or a Minor in That Field

	English	Math	Science	Life Science	Physical Science	Social Studies	History
Public total	20.8	26.6	16.5	38.5	56.2	13.4	53.9
Track of class							
Low-track	24.7	33.5	20.4	42.3	66.8	14.3	55.1
Medium-track	11.8	15.7	9.2	31.4	42.8	8.9	44.9
High-track	11.2	20.4	7.2	20.7	43	11.2	51.1
Grade level of class							
7th grade	32.2	48.8	31.8	60.4	73.8	23.9	56.3
8th grade	32.9	37.1	23.8	32.9	75.7	19.7	60.5
9th grade	15.7	18.1	10.7	27.9	61.7	8.7	48.7
10th grade	11.1	16.8	8.9	29.3	45.7	8.8	51.1
11th grade	11.2	15.9	6.4	23.5	36.8	6.8	47
12th grade	13.9	24.2	13.1	25.3	41	11.3	62.4

Source: Richard M. Ingersoll, "The Problem of Underqualified Teachers in American Secondary Schools," *Educational Researcher* 27, no. 9 (March 1999), 5.

taught English by out-of-fielders, versus 11 percent of high trackers. That means the children most in need of knowledgeable, skilled teachers are least likely to get them.

The numbers may be even worse. Several education scholars have bemoaned the fact that only 38 percent of all public-school teachers have any academic major, as opposed to a major in education, and have chastised the National Center for Education Statistics (and, by implication, Ingersoll) for allowing majors such as "math education" to count as "in-field" teaching. Not counting math education and kindred degrees makes a tremendous difference: only 37 percent of secondary-school math teachers possess an actual major or minor in math, physics, or engineering; another 30 percent majored or minored in math education. But Ingersoll points out that, at least at the University of Georgia, a degree in math education requires as many math credits as does a degree in math. And it's not altogether clear that a seventh-grade math teacher needs a college degree in math, or that an elementary-school teacher needs to major in an academic field. The fact that 66 percent of high-school teachers majored in an academic field makes the situation seem slightly less alarming.[13] Also, 50 percent of teachers with three or fewer years of experience majored in academic subjects (versus 36 percent of teachers with twenty years of experience or more), indicating that perhaps this trend has begun to reverse. (Then again, it could just indicate that teachers with academic majors tend to leave the profession at higher rates because of their greater marketability.)

The problem of out-of-field teaching is most acute in math and science, and in both the upper grades and high poverty schools. Wherever it happens, though, it shortchanges children who should learn from teachers who are intimately familiar with their subjects and it harms teachers who, already forced to juggle burdensome teaching loads, are then asked to master a whole new subject—or teach one they haven't mastered at all.

The quality of our education system is determined more by the quality of the teaching that goes on each day than by any other single factor.

Their Own Words

Another indicator of teacher quality is what teachers think of their own preparedness. Here the most pressing problems seem to be in areas that have become important rather recently. For instance, only 20 percent of teachers who teach students with Limited English Proficiency or diverse cultural backgrounds feel well prepared to do so. Just 20 percent of teachers say they understand how to integrate technology into the classroom, and only 36 percent think they are well prepared to implement state or district curricular and performance standards (see Table 2). Our training of teachers has obviously not caught up with the headlong rush into equipping all schools with computer technology, the burgeoning LEP population and rising diversity of our schools, or with the attempts to raise K-12 academic standards.[14]

Student Learning

Everything a teacher does should be aimed at improving student learning, so using student learning as a measure of teacher quality should enable us to account for what teachers do—and thus get a measure of teacher quality that goes beyond teachers' test scores from years earlier.

Teacher quality can be measured via student performance in two ways: by comparing our students' performance against that of students from other countries (and thus our teachers' performance against that of teachers from other nations), and by gauging our students' performance against benchmarks that we think they should meet. Obviously these are crude comparisons, as we haven't controlled for family and community difference, for cultural variation, or for differing societal investments in schools and teachers. Still, it seems reasonable to suggest that the quality of our education system is determined more by the quality of the teaching that goes on each day than by any other single factor.

The most recent international comparison of student performance, the Third International Mathematics and Science Study (TIMSS), found that the United States lagged far behind other nations, especially in the upper grades. In twelfth grade, 14 nations had significantly higher average math scores than the U.S.; only two, Cyprus and South Africa, had lower scores. In twelfth-grade science, 11 nations had higher average scores than the U.S. and, again, just two had lower scores. The results likely

Table 2: Percent of Full-time Public School Teachers Indicating How Well Prepared They Feel to Do Various Activities in the Classroom: 1998

	How well prepared teachers feel			
Activity	**Very well prepared**	**Moderately well prepared**	**Somewhat well prepared**	**Not at all prepared**
Maintain order and discipline in the classroom	71	24	4	1
Implement new methods of teaching (e.g. cooperative learning)	41	41	16	2
Implement state or district curriculum and performance standards	36	41	20	3
Use student performance assessment techniques	28	41	26	4
Address the needs of students with disabilities*	21	41	30	7
Integrate educational technology in the grade or subject you teach	20	37	34	9
Address the needs of students with limited English proficiency or from diverse cultural backgrounds*	20	33	30	17

* Percents are based on teachers who teach students with these characteristics

Note: Percents are computed across each row, but may not sum to 100 because of rounding.

Source: Bernie Greene, et. al., *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers* (Washington, D.C.: U.S. Department of Education, 1999), 48.

would have been even worse had East Asian nations participated in the two twelfth-grade tests. At the eighth-grade level, twenty nations outscored the U.S. in math, nine in science. In fourth grade, the U.S. did significantly better: only nine nations outscored our children in math at this level and just one did so in science. For some reason, U.S. performance drops precipitously after fourth grade, leaving U.S. students in the cellar by the time they reach twelfth grade. International comparisons thus find our education system seriously deficient in the areas where, not coincidentally, we have the highest percentage of out-of-field teachers at the secondary level.[15]

National measures of where U.S. students are relative to where we expect them to be have similar results. Over 20 percent of twelfth graders scored below "Basic" on the 1998 National Assessment of Educational Progress in reading, with "Basic" denoting "partial mastery of the knowledge and skills that are fundamental for proficient work at a given grade."[16] Wide racial gaps also persist: 43 percent of black twelfth-graders scored below "Basic," as did a woeful 64 percent of black fourth-graders. In the most recent math assessment, 31 percent of twelfth-graders scored below "Basic," as did 62 percent of black twelfth graders.[17]

That means that lots of U.S.children—from a fifth of an entire grade to two-thirds of an entire racial group—are not reaching levels that the nation considers even "partial mastery." Whether academically talented persons are being drawn into teaching, whether teachers know their subjects well, and whether teachers themselves feel well-prepared to handle the challenges they face are all important indicators of teacher quality. The most important of all, however, is the ultimate measure of school effectiveness: how much and how well the students are learning. Here we see that large portions of the pupil population are not achieving at levels that society has deemed necessary to survive in our high tech, knowledge-based economy. Can there be more compelling evidence of the inadequacy of our teaching force?

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[1] Richard J. Murnane, et. al., *Who Will Teach? Policies that Matter* (Cambridge, Mass: Harvard University Press, 1991), 10.

[2] See Table 131 in Thomas D. Snyder, et. al., *Digest of Education Statistics 1997*, (Washington, D.C.: U.S. Department of Education, 1997), 135.

[3] Drew H. Gitomer, Andy S. Latham, and Robert Ziomek, *The Academic Quality of Prospective Teachers: The Impact of Admissions and Licensure Testing* (Princeton, N.J.: Educational Testing Service, May 1999). Passing the Praxis I exam is not an impressive feat: in Virginia, the state with the highest cutoff scores, candidates only had to answer 70 percent of the math questions correctly in order to pass. This on a test where only 12 percent of the questions involve the use of algebra, versus 25 percent on the twelfth-grade National Assessment of Educational Progress (NAEP) math exam. Yet 44 percent of Praxis I takers nationally would fail to pass Virginia's standard. Minnesota, which sets the lowest cutoff score, only requires candidates to answer 50 percent of the test questions correctly. Ten percent of Praxis I takers nationally would fail to meet this standard. See Ruth Mitchell and Patte Barth, "How Teacher Licensing Tests Fall Short," *Thinking K-16* (Washington, D.C.: The Education Trust, 1999).

[4] Robin R. Henke, et. al., *Out of the Lecture Hall and into the Classroom: 1992-93 College Graduates and Elementary/Secondary School Teaching* (Washington, D.C.: U.S. Department of Education, 1996), 58.

[5] See Table 2.7 in Diane M. Wah and Dawn S. Robinson, *Examinee and Score Trends for the GRE General Test* (Princeton, NJ: Educational Testing Service, 1990), 64-65.

[6] Murnane, et. al, 64.

[7] Ibid, 69.

[8] Ibid, 85.

[9] Henke, et. al., 58.

[10] See Barbara A. Bruschi and Richard J. Coley, *How Teachers Compare: The Prose, Document, and Quantitative Skills of America's Teachers* (Princeton, N.J.: Educational Testing Service, 1999).

[11] Bernie Greene, et. al., *Teacher Quality: A Report on the Preparation and Qualifications of Public School Teachers* (Washington, D.C.: U.S. Department of Education, 1999), 19.

[12] See Richard M. Ingersoll, "The Problem of Underqualified Teachers in American Secondary Schools," *Educational Researcher* 27, no. 9 (March 1999).

[13] Greene, et. al., 12.

[14] All statistics on teacher preparedness are from Greene.

[15] See Harold W. Stevenson, *A TIMSS Primer* (Washington, DC: Thomas B. Fordham Foundation, 1998).

[16] See Patricia L. Donahue, et. al., *NAEP 1998 Reading Report Card for the Nation and the States* (Washington, DC: US Department of Education, 1999).

[17] See Clyde M. Reese, et. al., *NAEP 1996 Mathematics Report Card for the Nation and the States* (Washington, DC: US Department of Education, 1997).

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Teacher Training and Licensure: A Layman's Guide

Dale Ballou and Michael Podgursky

Concern over the quality of U.S. teachers has renewed interest in the ways they are prepared and licensed. Today's most prevalent prescription for boosting teacher quality follows a regulatory approach: more clinical training, less alternative certification, more rigorous exams of pedagogical knowledge, and universal accreditation of teacher education programs. Podgursky and Ballou conclude that such policies are misguided. The knowledge base upon which the required training would be built is not scientifically grounded. Nor have the self-policing organizations of the education profession proven that they maintain rigorous criteria in assessing teacher performance. Although testing prospective teachers is popular, the choice of a cutoff score is essentially arbitrary and denies schools the opportunity to consider otherwise strong candidates. In light of these drawbacks, the authors suggest that hiring decisions should be vested in local school officials whose opportunity to assess candidates' skills is superior to that of a remote licensing agency. The best policy is to hold schools accountable for their pupils' performance while removing unnecessary encumbrances on their ability to recruit widely and hire the ablest persons they can find to teach their students.

Overview of Teacher Training and Licensure

In 1983, the National Commission on Excellence in Education issued a report on the state of American education entitled *A Nation at Risk*. This report called attention to a number of serious problems in our public schools, among them the quality of teaching.

Fifteen years later, teachers are again the focus of public attention. The continuing growth of the school-age population and the press for smaller classes, combined with the impending retirement of a substantial share of the current workforce over the coming decade, has fueled concerns about the nation's ability to staff its classrooms without a reduction in teacher quality. The National Commission on Teaching and America's Future, a private organization funded by the Carnegie and Rockefeller Foundations, has issued two well-publicized reports critical of teacher preparation, calling for a national crusade to reform it. The quality of education schools was also at the forefront of debates surrounding reauthorization of the Higher Education Act. Amendments were offered to set specific performance targets for any teacher training program receiving federal support. In Massachusetts, 59 percent of candidates failed the state's first examination of prospective teachers in 1998. This set off an acrimonious public debate about professional standards that led to the resignation of the commissioner of education and to an ongoing debate about the role of schools of education in teacher preparation.

To teach in a public elementary or secondary school, it is normally necessary to hold a state license (often, though inaccurately, termed a certificate).[1] The purpose of the license is to assure the public that the teacher has met certain minimum standards of proficiency. Accordingly, when professional quality appears to be low, as it does today in public education, the solution seems obvious to many: raise the standards for a license. Hence the many proposals to enforce stricter licensing standards and to demand more of teachers before they are permitted to practice.

In this paper we review these proposals. The rest of this introduction comprises a brief overview of the current system of licensing and the reasons that teachers are licensed in the first place. In the second section, we take up proposals to reform teacher education. We first consider whether the training offered prospective teachers is grounded in a solid research base, as it is in professions like medicine. We then turn to specific reform proposals involving the accreditation of teacher education programs, subject matter preparation and teaching methods. We conclude that the evidence does not support many of the reforms currently underway.

In the third section, we look at an alternative approach to teacher licensure, based on testing teachers' knowledge and skill. We review the arguments for and against subject matter testing and the growing use of authentic or performance-based assessment. While teacher testing serves some valuable purposes, we conclude that imperfections in our test instruments make it unwise to give too much weight to test results in deciding who should be permitted to teach.

The system of certificates and endorsements that states use is detailed and complex. Missouri, a typical state in this regard, confers certificates in 73 different subject areas and 119 vocational areas.

In the final section, we describe the role that teacher licensing should play within a broader set of policy initiatives designed to enhance school accountability.

The Current Licensing Regime

Licensing requirements vary considerably from state to state, although some reciprocity exists between states. In most states, authority for licensing teachers and approving teacher training programs rests with the state board of education or state education agency. However, the National Education Association (NEA) has long proposed that such regulatory authority be vested in independent professional boards whose membership is predominantly practitioners, such as those in medicine or law. NCTAF has made a similar recommendation. There has been considerable movement in this direction. Fifteen states now have such boards, with ten established since 1990.

Table 1 displays information on the variety of licensing regulations. Every state requires new teachers to hold a bachelor's degree. In some states, this degree must be earned in education from an approved teacher training program. In others, prospective teachers must complete education courses while majoring in an academic discipline such as English or history, or acquire a master's degree in education afterwards. In either case, an approved program involves a minimum number of credit hours in education courses (usually about a semester of work) plus student teaching (a second semester). Many programs have added requirements of their own to the minimum set by the state, so that it can take more than a year to satisfy all professional education requirements.

All states have some mechanism for approving teacher training programs. In professions such as medicine or law, licensure requires that the practitioner graduate from a program accredited by a recognized private professional association. For example, in order to sit for medical board exams, a medical student must be enrolled in a program accredited by the Liaison Committee on Medical Education. In education, by contrast, most state-approved teacher training programs are not accredited by the profession's dominant private accrediting group, the National Council for Accreditation of Teacher Education (NCATE). Fewer than ten states mandate NCATE

Table 1. Requirements for Initial Teaching License

Licensing Requirement	**Number of States**
BS/BA awarded by an accredited or state-approved institution	50
BS/BA with education major	13
BS/BA in academic discipline (e.g., history, English)	12
Required course work in pedagogy	50
Field experience/Student teaching required	39
Teacher Testing	
Basic Skills Prior to Teacher Training[a]	25
Basic Skills Prior to Certification[a]	22
Pedagogy Prior to Certification[a]	25
Subject Matter Prior to Certification[a]	22

[a] Tests required of some or all applicants

Source: National Association of State Directors of Teacher Education and Certification. *Manual on the Preparation and Certification of Educational Personnel 1998-99* (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1998).

accreditation, although others have entered into arrangements whereby NCATE participates in the state's own review of its programs.

Most states also require prospective teachers to pass one or more tests before they are admitted into a teacher education program or granted a license (or both). There are four types of tests: basic skills, general knowledge, pedagogical knowledge, and content knowledge. The last focuses on subject knowledge relevant to the teacher's field (e.g., music for music teachers).

The system of certificates and endorsements that states use is detailed and complex. Missouri, a typical state in this regard, confers certificates in 73 different subject areas and 119 vocational areas.

Not surprisingly, given this complex system, it is virtually impossible for every teacher in every classroom for every hour of the day to be in compliance with all these regulations. As a consequence, every state has provisions for emergency or temporary licensure. Critics like the NCTAF allege that districts use these emergency or provisional licenses in an opportunistic way to staff their courses, covering up lax or irresponsible management and an unwillingness to raise teacher pay. Other policies have lowered entry barriers for non-traditional teachers (e.g., Teach for America, Troops to Teachers). Even so, in 1993-94, 92 percent of teachers reported that they were fully certified in their main teaching assignment.[2]

The case for licensing reform turns on whether hiring decisions will improve if administrators are constrained to offer employment only to teachers who have met the proposed licensing standards.

Why Do We License Teachers?

Occupational licensing is a policy by which the government prevents practitioners of a trade from selling their services to the public if they do not hold a license. The usual justification for this type of restriction is that licensing protects the public from incompetent or unscrupulous practitioners. In these markets, it is argued, consumers do not have the expertise to judge the quality of the services they are buying. Transactions may be infrequent, and the costs of making a mistake may be very great. Doctors and lawyers, for example, know far more about the quality of their services than the typical buyer, and mistakes can be very costly for the consumers. In this type of situation, unregulated markets work poorly or not at all. Government intervention to establish standards of minimum quality may therefore serve the public interest.

Teacher licensing is different. Parents do not buy services from teachers as they do from doctors or lawyers. Teachers are hired by school administrators, not by the public at large. These administrators ought to be expert judges of teaching ability: after all, hiring staff is one of their most important functions. Administrators are also in a good position to acquire information about the teachers they might hire—indeed, they are generally better positioned to evaluate teachers than either the public or a state licensing agency. Among the information administrators rely on are college transcripts, letters of recommendation, impressions formed during interviews and sample lessons, and even classroom observations (when applicants have done student or substitute teaching in the district).

However, there is no assurance that administrators will use the information at their disposal to make good hiring decisions. The public needs to be protected from corrupt and incompetent administrators and from the pressure school boards can put on superintendents and principals to hire friends or relatives of board members. Political patronage, sheer incompetence, laziness, and bureaucratic red tape have all had adverse effects on teacher selection. By requiring districts to hire teachers who have demonstrated at least a minimum level of competence, licensing protects the public from administrators and school boards that would engage in such abuses.

Advocates of licensing reform have not quantified the amount of nepotism, corruption, incompetence, and the like in American school systems. We suspect that gross abuses are not widespread. Most administrators care about the quality of the teachers they hire. They do not knowingly prefer inferior candidates. However, hiring policies *are* imperfect: in particular, there is systematic evidence that school administrators do not attach enough importance to the quality of an applicant's academic record and other indicators of cognitive ability.[3] Thus, while it is doubtful that the majority of administrators consciously hire inferior applicants, there is compelling evidence that many overlook valuable predictors of teaching performance and often fail to hire the best person available. The case for licensing reform turns on whether hiring decisions will improve if administrators are constrained to offer employment only to teachers who have met the proposed licensing standards.

In addition, it must be shown that licensing reform is a better way of dealing with the problem of professional quality than the alternatives. This point is particularly relevant to teacher licensing. Usually the state issues occupational licenses to practitioners who work in the private sector, selling their services to private buyers (households, firms, non-profit organizations). In public education, by contrast, both the teachers who are licensed and the licensed administrators who hire them are state employees. This raises the possibility that more direct remedies for administrative failure are available to the state, an important point to which we return in the final section. It represents another difference between teacher licensure and licensure in professions dominated by private practice, such as medicine and law.

Proposals to Reform Teacher Education

Licenses are awarded to professionals who present evidence of minimal competence. Almost always, this evidence includes proof that the practitioner has completed an approved program of study or training at an accredited institution. Policies that set standards for the training of professionals are therefore an important part of a licensure system, and as we will see, reform of teacher education is a major focus of current debate about teacher licensure.

In 1986, an organization of deans of leading schools of education, the Holmes Group, issued a report calling for significant restructuring of teacher education. In the view of these deans, traditional programs completed in the course of a four-year undergraduate degree were seriously deficient. Prospective teachers, many of whom majored in education rather than an academic discipline, did not acquire sufficient command of the subjects they were to teach. The courses they took in professional education (e.g., teaching methods) lacked rigor and often failed to incorporate approaches based on up-to-date research. The Holmes Group recommended that would-be teachers complete an academic major as undergraduates and that teacher education be a post-baccalaureate program of study (as in the medical and legal professions). These post-graduate programs would involve one or two years of classroom study, followed by a year-long internship in a professional development school (analogous to a teaching hospital) where newly trained teachers would work under the supervision of expert mentor teachers.

While the NCTAF claims that effective programs of teacher education equip teachers with strategies and techniques that result in high levels of student achievement, it is rather vague on what these strategies and techniques are.

The recommendations of the Holmes Group have been endorsed by other organizations that have been prominent advocates for licensing reform, notably the National Commission on Teaching and America's Future. In its 1996 report, the commission added a recommendation of its own: that all licensed teachers complete their preservice training in programs accredited by the National Council for Accreditation of Teacher Education (NCATE).[4] Although NCATE does not require accredited programs to follow all the recommendations of the Holmes Group, NCATE approval would nonetheless become an enforcement mechanism to compel college administrators to upgrade underfinanced and poorly designed programs of teacher education.

In addition, the NCTAF has sought to close loopholes that permit unlicensed teachers to be hired on waivers (temporary and emergency certificates), a practice used to fill vacancies in districts that have trouble finding enough licensed instructors. The commission also opposes alternative certification (alternate route) programs that streamline entry by reducing preservice training. While nominally supportive of alternate programs for individuals making mid-career changes, the commission opposes any relaxation of requirements that would, in their view, put untrained teachers in the classroom. The model of alternative certification supported by the commission calls for spending a year in a master's program before teaching. Since this is an option that has always been available to college graduates seeking to become teachers, the commission is effectively opposed to alternate routes in all but name.

The Knowledge Base for Professional Education

In the vernacular of teacher educators, the research identifying best teaching practices constitutes the profession's *knowledge base*. Drawing an explicit parallel between education and medicine, the Holmes Group and the National Commission have argued that licensing and accreditation standards should reflect the best research on what teachers need to know and do, just as medical research provides the underpinning for the training and licensing of physicians.

The following passage from the 1996 NCTAF report typifies this view.[5]

> Students will not be able to achieve higher standards of learning unless teachers are prepared to teach in new ways and schools are prepared to support high-quality teaching....Teaching in ways that help diverse learners master challenging content is much more complex than teaching for rote recall or low-level basic skills. Enabling students to write and speak effectively, to solve novel problems, and to design and conduct independent research requires paying attention to learning, not just to covering the curriculum. It means engaging students in activities that help them become writers, scientists, mathematicians, and historians, in addition to learning about these topics. It means figuring out how children are learning and what they actually understand and can do in order to plan what to try next. It means understanding how children develop and knowing many different strategies for helping them learn.
>
> Teachers who know how to do these things make a substantial difference in what children learn. Furthermore, a large body of evidence shows that the preparation teachers receive influences their ability to teach in these ways. However, many teachers do not receive the kind of preparation they need.

While the commission claims that effective programs of teacher education equip teachers with strategies and techniques that result in high levels of student achievement, this passage is rather vague on what these strategies and techniques are. Effective teachers are said to "engage students in activities" and "figure out how children learn," but just how these things are done is not specified. Instead, numerous citations appear to a research literature that, in the commission's view, has established a knowledge base for professional education analogous to the scientific foundation for the practice of medicine.

The first citation to the literature that accompanies this passage is to an article by three prominent educators at Vanderbilt University, which contains the following assessment of the research literature.[6]

> Because the research reviewed examined a broad range of teacher behaviors, and because measures of effectiveness are not specifically tied, in most cases, to those behaviors, the available evidence does not allow identification of how differences in teachers' capabilities that might be related to their preservice preparation accounted for differences in their performance. Quite clearly,

> teachers learn to do some things through their education courses that might reasonably be expected to improve student achievement.

In other words, prospective teachers learn to do something in their education courses that we think helps them later, but we aren't sure just what it is. The experts cited here expressly deny that education research has identified which state-of-the-art pedagogical practices make teachers more effective in the classroom.

NCTAF's claims notwithstanding, there is no knowledge base for pedagogical practice comparable to that underlying medicine.

Although it is surprising to find this admission in a paper cited by the National Commission, those who have watched the succession of innovations coming out of the nation's schools of education will have surely anticipated this conclusion. Practices that are successful in one setting turn out not to work equally well elsewhere, for reasons which are often difficult to identify. Widely different methods sometimes succeed with similar kinds of students. The lack of a solid foundation for many pedagogical innovations is evident in the large number that turn out to be passing fads. It also hampers efforts to establish rigorous standards for teaching training and licensure. Indeed, this much is admitted by those who are closely involved in this effort, as evident in the following remarks by the president of the newly formed Teacher Education Accreditation Council , an organization that seeks to provide an alternative to NCATE.[7]

> At the moment, most professional educational standards are formulated at fairly abstract levels so it has not been possible to really test and prove them. Others are quite specific and prescriptive—for example, about how teacher education should be administered and organized. These also have not been tested empirically and their opposites might work just as well.... More to the point, the current standards, upon close reading, give teacher educators little guidance on key questions—like the relative roles of phonics and calculators in reading and mathematics instruction, for example. The teaching profession does not have, despite the pronouncement of standards, a clear conception of educational malpractice. Until we do, the noble standards we enact are somewhat premature. They certainly await confirmation by further research....We simply do not have the evidence for many standards at this time. Few standardized educational practices and innovations are grounded in solid research....

NCTAF's claims notwithstanding, there is no knowledge base for pedagogical practice comparable to that underlying medicine. Consider, for example, the findings of the process-product research carried out in the 1970s and early 1980s. Psychologists and educators involved in this effort claimed that they had at last identified what effective teachers should do. We excerpt some of these findings from an article by one of the leading researchers in this area.[8]

> Students achieve more in classes where they spend most of their time being taught or supervised by their teachers rather than working on their own or not working at all... Students learn more when their teachers' presentations are clear rather than vague or rambling.... and when they are delivered with enthusiasm.... Students also learn more when the information is well structured...and when it is sufficiently redundant and well sequenced.... Achievement is maximized when teachers structure the material by beginning with overviews, advance organizers, or reviews of objectives; outline the content and signal transitions between parts; call attention to main ideas; summarize parts of the lesson as they are completed; and review the main ideas at the end.

Some of the prescriptions in this passage are obvious (e.g., presentations should be clear rather than vague or rambling). But others suggest useful practices that might not have occurred to a beginning teacher unaided. However, it would be a mistake to suppose that there exists a professional consensus on the behaviors described here. The teaching practices identified by the process-product research are at odds with the current enthusiasm for child-centered or discovery learning, in which students work cooperatively in groups, with the teacher playing a limited role as facilitator of students' development of their own knowledge. (More on this below.) Moreover, many of the prescriptions based on the process-product literature are very general (be organized, don't make questions too hard or too easy) and offer little guidance in concrete situations. Good teaching (as these researchers recognize) depends very much on making right choices within the broad guidelines. Often this will be a matter of applying common sense. In other situations the reasons for making one choice over another will be so subtle and context-specific (depending on the personalities of teachers and students) that effective practice will be very hard to learn anywhere but on the job.

One of the curious aspects of insisting that new teachers be trained in state-of-the-art methods is that the state of the art changes every few years.

> [T]here is reason to question whether students can learn and effectively transfer to practice all or even much of the pedagogical knowledge and skills that would be taught in extended programs. Considerable evidence exists that experienced teachers think differently about their work than do novices.... Teachers may learn some things best, such as cooperative learning strategies, once they have an experiential base upon which to build.[9]

One of the curious aspects of insisting that new teachers be trained in state-of-the-art methods is that the state of the art changes every few years. Teachers who were trained to do one thing must therefore learn to do another when the winds of education thinking change direction. Indeed, it is a commonplace among education reformers that public officials rarely provide sufficient funds to retrain teachers in new methods and new curricula, and that many reforms consequently fail to alter classroom practices. If this is truly the problem (and not that the reforms themselves are ill-conceived), then policy ought not be so greatly concerned with making sure teachers have been trained in the latest techniques, but rather with guaranteeing that prospective teachers are flexible, open-minded, and able to learn. The focus should be on recruiting reasonably intelligent people into the profession, not on pedagogical training.

We have mentioned the possibility that reforms are ill-conceived. The weakness of the knowledge base for teacher education has allowed many bad ideas to flourish. As noted by the president of the Teacher Education Accreditation Council:

> Few standardized educational practices and innovations are grounded in solid research and yet so many of them have had the support of the profession. If only because some have proven demonstrably harmful to students and their teachers, we should be cautious about standards that are based on little more than the consensus of large segments of the profession.[10]

Poor ideas secure a following in part because the scientific foundation for pedagogical prescriptions is weak. However, ideology also plays a large role in shaping the views of educators, as shown by the influence of the constructivist theory of learning on the teaching practices endorsed by leading schools of education. In the teaching methods inspired by this theory, teachers do not function as authoritative sources of knowledge, imparting facts and ideas directly to students. Rather, they are supposed to act as facilitators of students' discovery and production of their own knowledge. Unfortunately, this attempt to make education child-centered often means that students are deprived of the general knowledge required to make sense of the natural and social worlds. As a result, they are in no position to produce their own theories or test their own hypotheses. They show less interest in school work, particularly as they grow older, and they learn less.[11]

The influence of the constructivist paradigm is evident in extreme versions of whole language reading instruction, wherein children are denied systematic instruction in phonics. Proponents of this method hold that, if the language environment is sufficiently rich, children will discover on their own how to decode words, or decoding itself will be supplanted by whole word recognition. As it has turned out, this is one of the areas in which education research has produced definitive guidance on pedagogical practice: children need to be given instruction in phonics. Summarizing these findings, the National Research Council has determined that reading instruction must include systematic teaching of phonics. Yet the resistance of many advocates of the whole language approach to these findings indicates that controversies of this kind will surely be repeated as teacher educators espouse pedagogical practices for ideological reasons rather than because the evidence indicates they best promote student learning. Indeed, since the measurement of student achievement is itself an ideologically charged issue, it is difficult to confront educators with factual data on learning outcomes that will persuade them to change their minds.[12]

Constructivist-inspired pedagogical approaches are not restricted to English, but have also influenced teaching practices in the hard sciences and mathematics. Guidelines issued by the National Council for Teachers of Mathematics also reflect the predilection for student-centered learning popular in schools of education. Their application in the classroom has too often resembled whole language reading instruction, in which the teacher stands by while the student tries to guess what the word is. Worse, students can easily become confused about the very nature of mathematics, as the authors of a recent study of state mathematics standards explain.[13]

> [C]onstructivism, a theoretical stance common today, has led many states to advise exercises in having children discover mathematical facts, or algorithms, or strategies. Such a mode of teaching has its values, in causing students better to internalize what they have thereby learned; but wholesale application of this point of view can lead to such absurdities as classroom exercises in discovering what are really conventions and definitions, things that cannot be discovered by reason and discussion, but are arbitrary and must merely be learned.
>
> Students are also sometimes urged to discover truths that took humanity many centuries to elucidate, the Pythagorean theorem, for example. Such discoveries are impossible in school, of course. Teachers so instructed will necessarily waste time, and end by conveying a mistaken impression of the standing of the information they must surreptitiously feed their students if the lesson is to come to closure.

Another example of pedagogical innovation driven by ideology is the use that teacher educators have made of the theory of multiple intelligences developed by Howard Gardner of the Harvard Graduate School of Education.[14] This theory posits the existence of several types of human intelligence, each operating in its own distinctive domain: linguistic, logical-mathematical, spatial, bodily-kinesthetic, musical, interpersonal, and intrapersonal. This theory has been seized upon by educators eager for a more egalitarian alternative to the view that there is one general intelligence. The existence of multiple intelligences provides obvious support for teachers who believe that building student self-esteem is the key to further achievement. No student need feel smart or dumb compared to others: rather, all are intelligent in their own distinctive way. Numerous pedagogical approaches have been inspired by this theory, and many hundreds of references to Gardner's work have appeared in the education literature.

The profession has not demonstrated that it can reliably weed out bad ideas over time, converging on a set of practices that represents the best of what is known about how to teach.

The research support for Gardner's theory is not, however, very convincing.[15] Yet even if this were not the case, it is unclear what pedagogical prescriptions should be based on this view of intelligence. Some educators have argued that the school curriculum needs to be more balanced, including activities that engage each intelligence. But, as an astute critic of this theory has written, the notion that there are eight intelligences does not imply that school should be the institution responsible for developing all of them.[16] The curriculum should be based on an assessment of what students need to learn and be able to do. The desire to accommodate multiple intelligences can easily lead to situations in which important skills are de-emphasized in the name of balance.

To summarize, prospective teachers are introduced to some good ideas in their education classes. They are also exposed to bad ones. The profession has not demonstrated that it can reliably weed out the bad ideas over time, converging on a set of practices that represents the best of what is known about how to teach. Thus, while it is plausible that better preservice training will improve teachers' subsequent performance, it cannot be taken for granted that teacher educators know how to make good use of an extra year of teacher preparation—if that should be required—or that they can be trusted to police themselves by accrediting programs of teacher education. This is all the clearer when we look at the activities of the National Council on Accreditation of Teacher Education (NCATE).

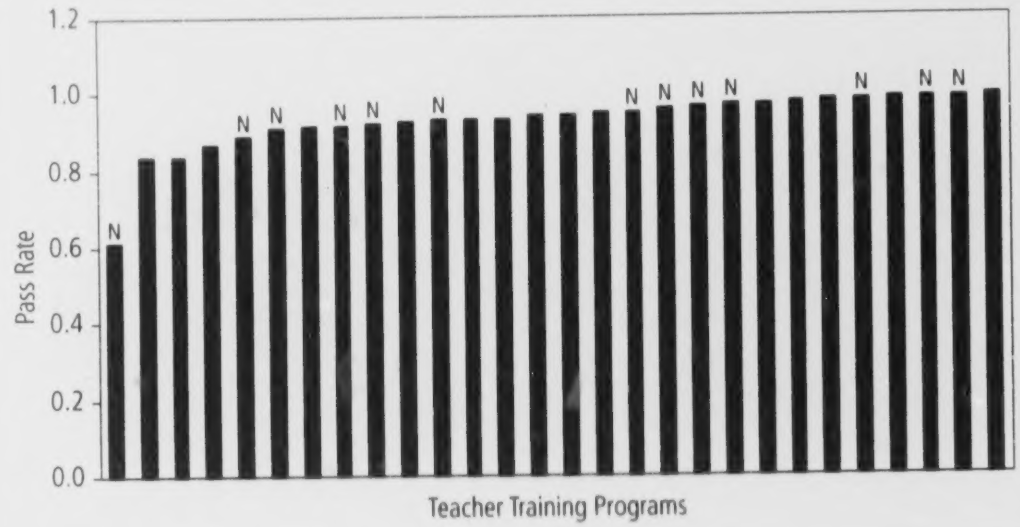
Accreditation of Teacher Education

NCATE bases accreditation decisions on evidence that teacher education programs have met standards concerning program content, student quality, faculty quality, and program autonomy.[17] In each of these areas, the Council's efforts fall far short of ensuring that accredited programs are in fact of high quality. We focus on the first two.

Although NCATE requires that programs recruit candidates who demonstrate potential for professional success, it does not require any particular admissions test or specify a passing score. Criteria for successfully completing training are just as vague. NCATE standards require that institutions ensure the competency of their graduates before recommending them for licensure, but competency is left undefined. Instead, NCATE indicates that a program can meet this standard by assessing graduates through the use of multiple sources of data such as a culminating experience, portfolios, interviews, videotaped and observed performance in schools, standardized tests, and course grades.[18] This is a requirement that program administrators use various methods of assessment, not that graduates be held to any particular standard of achievement.

The results of teacher licensing examinations indicate that student quality makes little difference to accreditation decisions. Figure 1 displays pass rates on the National Teacher Examination (NTE) for graduates of teacher training institutions in Missouri.[19] Each bar represents an institution. An N above the bar denotes an NCATE-accredited program. As the figure shows, NCATE schools are to be found at the top, middle, and bottom of the distribution. Indeed, the weakest institution in the state, as measured by licensure pass rates, is NCATE-accredited.

Figure 1. Pass Rates on NTE Exams in Missouri by Institution



All NTE exams, 1994-95 to 1996-97. Programs with N > 150 tests. "N" denotes NCATE accreditation.

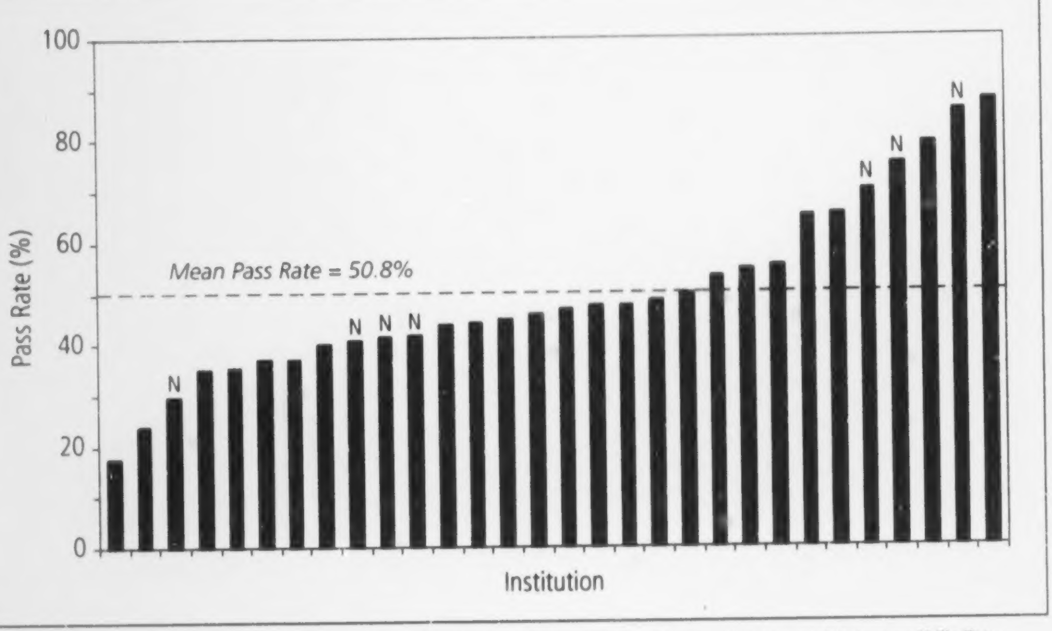
Figure 2 displays results for teacher licensing examinations recently administered in Massachusetts. (To improve comparability of results, we use scores on the Communications and Literacy Skills test taken by all students in each program.) As in Missouri, NCATE-accredited programs are not concentrated at the upper end of the distribution. Performance at four of the seven accredited institutions was distinctly mediocre.

Further evidence on NCATE standards comes from Pennsylvania, where there are large numbers of both accredited and non-accredited programs. Although the state would not identify the college attended by a given test-taker, it did indicate whether the institution was accredited by NCATE or not. On this basis we have plotted the (smoothed) distribution of test scores for all teachers seeking elementary certification between 1994 and 1997 in Figure 3. There is no substantial difference between the two distributions. Figure 4 presents analogous distributions for Missouri. In this case, scores from NCATE-accredited programs are distinctly inferior. Compared to the non-NCATE distribution, there are fewer NCATE test-takers in the center of the distribution and more in the left-hand tail, creating an NCATE bulge among the lowest scores.

NCATE standards for the content of professional education are also vague. Here is the council's first standard in this area.[20]

> The unit has high quality professional education programs that are derived from a conceptual framework(s) that is knowledge-based, articulated, shared,

Figure 2. Pass Rates by Teacher Training Institution: Massachusetts



Source: *Massachusetts State Department of Education. Pass rates for Communications and Literacy Skills Test. All programs with at least 15 test takers. "N" denotes NCATE accreditation.*

> coherent, consistent with the unit and/or institutional mission, and continuously evaluated.

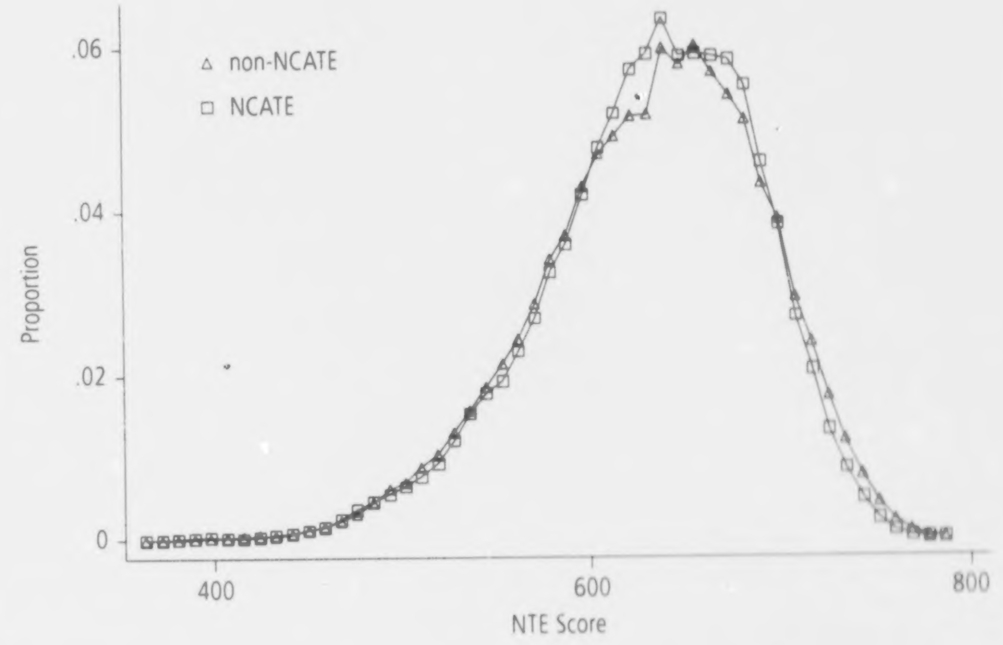
Several indicators follow that are meant to provide suggestions on how the program can meet this standard. These indicators are scarcely more precise, though some contain phrases that are code words within education circles, signaling the kind of program NCATE is apt to find acceptable. Typical of the indicators are these two:[21]

> The framework(s) reflects multicultural and global perspectives which permeate all programs.
>
> The framework(s) and knowledge bases that support each professional education program rest on established and contemporary research, the wisdom of practice, and emerging education policies and practices.

NCATE's standard on professional and pedagogical studies for initial teacher preparation is even more nebulous.[22]

> The unit ensures that teacher candidates acquire and learn to apply the professional and pedagogical knowledge and skills to become competent to work with all students.

Figure 3. Distribution of NTE Elementary Education Test Scores: Pennsylvania

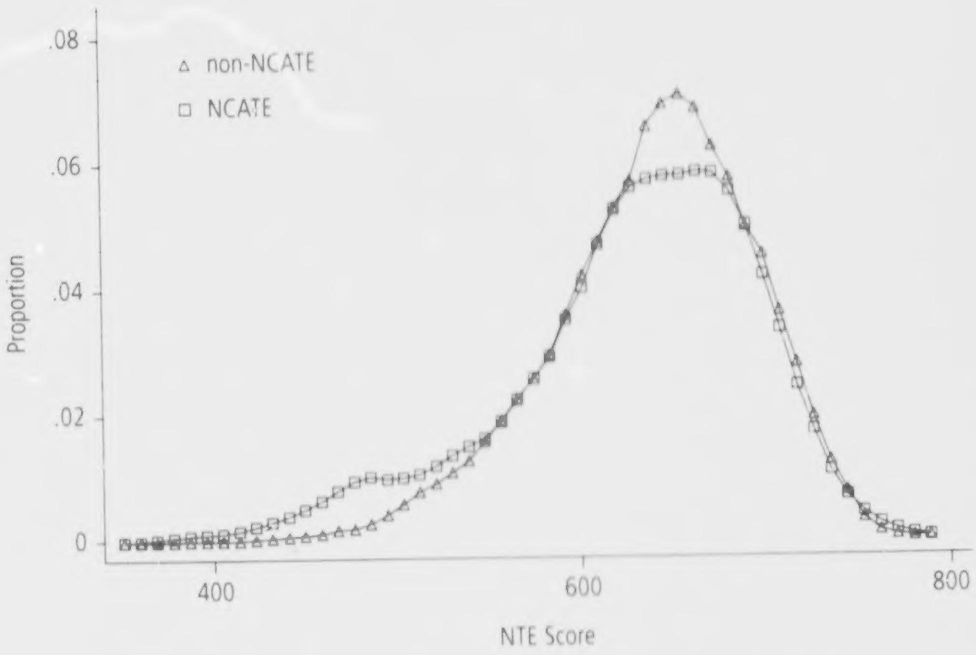


Source: *Pennsylvania Department of Education. Elementary Education NTE scores for 8,223 NCATE and 11,436 non-NCATE test-takers for academic years 1994-95 to 1996-97*

This is followed by indicators that this standard can be met if candidates complete studies that deal with different student approaches to learning, individual and group motivation, instructional strategies for developing critical thinking, verbal, nonverbal, and media communications for fostering active inquiry, and so forth. At no point in these standards and indicators does the council endorse *particular* strategies for developing critical thinking that it believes superior to others. Teachers are to learn how to motivate students, but the council expresses no views on which motivational techniques are best.

This inspires little confidence that institutions accredited by NCATE offer superior training. Still, it is possible to test this hypothesis. If the claim is correct, then once we control for the general academic achievement or ability of students entering a teacher-training program (inputs), performance on licensing exams (output) should be higher in NCATE than in non-NCATE institutions. We have conducted such an analysis using our sample of Missouri teachers.[23] The results fail to support the claim that graduates of NCATE-accredited institutions learn more between the start of teacher

Figure 4. Distribution of ETS Elementary Education Test Scores: Missouri



Source: *Missouri Department of Elementary and Secondary Education. Elementary Education NTE scores for 3,756 NCATE and 2,723 non-NCATE test-takers for academic years 1993-94 to 1996-97*

training and their graduation. Indeed, the estimated effect of attending an accredited institution is negative, although statistically insignificant.

Scores on licensing examinations represent only one indicator of program quality. NCATE's defenders have argued that graduates of accredited programs excel in other ways. Because they are better prepared for the challenges of the classroom, they are less likely to quit during the early years of their careers, when attrition is notoriously high. It is also alleged that teachers trained in accredited programs exhibit more professionalism in their relations with students and colleagues.

Data from two surveys conducted by the U.S. Department of Education permit us to test these claims. By most measures, there is little difference between graduates of accredited and non-accredited programs.[24] Virtually identical percentages sought teaching jobs after graduating (Table 2). Of those who obtained a job, a substantial majority (80 percent in both groups) expressed no regret at having chosen teaching as a career, saying they would make the same choice again. More than half of both groups intended to spend their entire careers as teachers. Fewer than a fourth (and

Table 2. Comparison of New NCATE and Non-NCATE Teachers

Indicator	NCATE	Non-NCATE
Applied for a teaching job (%)[1]	92.0	90.0
Certainly or probably would become a teacher, if given the chance to start over again (%)[2]	80.2	79.7
Plan to spend full career as teacher (%)[2]	58.6	58.4
Sometimes feel it is a waste of time to do a good job (%)[2]	24.4	18.9
Time spent after school on lesson preparation, grading, parent conferences (hrs. in the most recent week)[2]	10.4	9.7
Moonlight in a non-teaching job during the school year (%)[2]	13.2	12.0
Received an offer, conditional on having applied (%)[1]	82.0	84.0
Mean teaching salary[1]	$19,843	$20,076

[1] **Source:** *Baccalaureate and Beyond Longitudinal Study, First Follow-Up, 1993-94.* Sample restricted to certified teachers.

[2] **Source:** *Schools and Staffing Survey, 1993-94.* Sample restricted to persons who earned their bachelor's degrees in 1990 or later and who started teaching no earlier than 1992.

more NCATE than non-NCATE graduates) indicated that they sometimes felt it was a waste of time to do their best in the classroom. NCATE teachers spent somewhat more time during the week preceding the survey on instruction-related activities outside school (preparing lessons, grading papers, etc.). However, the difference between the two groups was not significant at conventional levels. A slightly larger proportion of NCATE teachers moonlighted during the school year, but again, the difference was not statistically significant.

In short, there is little evidence that teachers trained in NCATE-accredited schools conduct themselves more professionally, are more likely to continue teaching, or experience more satisfaction with their career choice. Perhaps more revealing, there is no evidence that those hiring new teachers think so either. The percentage of non-NCATE applicants who found a teaching job was as high as among NCATE applicants. The jobs they obtained paid as well.

Subject Matter Preparation

Both the Holmes Group and the NCTAF have recommended that teachers complete more college course work in the subjects they will teach, urging that teachers earn a major, or at least a minor, in their fields. Well-intentioned as this proposal is, the amount of subject matter preparation it would require is often excessive. For example, guidelines for NCATE accreditation prepared by the National Council of Teachers of Mathematics (NCTM) recommend that teachers of mathematics in grades 5 to 8 should understand fundamental concepts of calculus. This is a demanding requirement for someone who will be teaching arithmetic.[25] The council's purpose is understandable: to ensure that all teachers of mathematics, at whatever level, grasp basic mathematical concepts and share an aptitude for quantitative reasoning. By requiring advanced training in the subject, the council hopes to screen out the incompetent from teaching even low level math courses, where they can do considerable damage. Yet people who haven't studied calculus can still be effective teachers of mathematics at lower levels. A better screening device would recognize this. Instead, the NCTM erects a high barrier that will exacerbate the shortage of qualified math teachers.

Requiring secondary school teachers to earn a major or a minor in their subjects might make sense, if there were not a clearly superior policy that could be adopted instead: requiring teachers to pass a test of subject knowledge.

Ironically, this policy fails on its own terms: to ensure that teachers of mathematics (or any other subject) will have mastered the material they will be teaching. Standards in many American colleges are so low that requiring teachers to major or minor in their subjects is no guarantee that they will actually understand them. This is evident in the number of prospective teachers who cannot pass relatively low level examinations in the subjects they have studied.[26]

Sadly, standards in higher education may fall still further if the reform of teacher licensing requires a history teacher, for example, to major in history rather than social studies education. Well-intentioned though this regulation is, it cannot ensure that prospective teachers bound by it will be as well-trained and enthusiastic about their subject as teachers who majored in history before it became a requirement. An influx of relatively weak students into courses they would not have chosen for themselves will put pressure on academic standards and may dilute the education once offered history majors.

All this said, requiring secondary school teachers to earn a major or a minor in their subjects might still make sense, if there were not a clearly superior policy that could be adopted instead: requiring teachers to pass a test of subject knowledge. We return to this issue in the next section.

Training in Teaching Methods

At present, most prospective teachers complete their courses in professional education and their student teaching within the conventional four-year undergraduate degree. The Holmes Group and other proponents of reform would instead require would-be teachers to spend two to three years in post-graduate professional study and internships. As previous discussion has shown, teacher educators are by no means agreed that an extended program of this kind will significantly improve classroom practice. Additional objections have been raised by educators from liberal arts colleges, who argue that combining the study of education with the liberal arts in a traditional four-year undergraduate program offers important opportunities for intellectual synthesis and personal development.[27]

In the face of such doubts, the evidence offered to support the proposed reform is not strong. In its 1996 report the National Commission cites a study purporting to show that graduates of five-year programs are better prepared than teachers who completed teacher education within the traditional four-year degree.[28] The investigators followed 1,400 teachers from a consortium of eleven teacher preparation programs, seven of which had five-year programs. They found that more graduates of the five-year programs became teachers (90 percent to 80 percent) and that they remained in teaching longer. Yet differences of this kind are to be expected even if the extra year of training per se had no effect. Individuals who enroll in a five-year degree program are likely to have a stronger initial commitment to teaching for the simple reason that they will have lost an extra year if teaching turns out to be the wrong career decision. Moreover, this investment of an extra year may make them more willing to persevere even if their initial experience in the classroom is unsatisfactory. In short, while the National Commission claims that the greater success of five-year graduates demonstrates the superiority of the training they received, there is every reason to think that these groups differed before they enrolled in teacher education.

In the states that have most actively promoted alternative certification, more than ten percent of new teachers have entered through alternate routes.

What of these teachers' performance in the classroom, a matter of presumably greater concern? The only indicator of effectiveness available to researchers was a survey completed by supervising principals. There was no statistically significant difference between the two groups in the ratings teachers received.

Many states have adopted alternative certification programs that streamline entry into the profession by reducing preservice training. In most states, private schools (and, in some, charter schools) are permitted to hire unlicensed teachers who may never have taken an education course. This makes alternative certification a valuable test case: if education courses are critically important for new teachers, teachers who come through alternative route programs but otherwise lack prior training should be demonstrably inferior to those who have graduated from teacher education programs.

Although the best way to answer this question would be to compare conventionally trained teachers to alternative teachers on the basis of student achievement, this has seldom been done. The small set of studies that exist do not afford a strong basis for generalization.[29] We therefore turn to other, less direct indicators.

The first of these is the fact that so many teachers without standard licenses are hired. In the states that have most actively promoted alternative certification, more than ten percent of new teachers have entered through alternate routes. (In New Jersey, which has done the most, the share has ranged from 23 to 40 percent.) This kind of evidence may seem to beg the question, of course: such patterns of hiring might merely exemplify the poor decision-making that creates the need for licensing in the first place. However, this is not credible, given the large number of districts, ranging from affluent suburbs to poor inner cities, that have sought alternate route teachers. The New Jersey case is especially revealing. The percentage of districts with high socioeconomic rankings that hire alternate route teachers has regularly exceeded the percentage among low-ranking districts.[30] The former serve communities where parents are well-educated and closely monitor school performance. Such systems also have their pick of applicants who have obtained licenses by the traditional route. It is not likely that so many would mistakenly prefer alternate route teachers.

This argument applies still more forcefully to private schools, which operate in a competitive marketplace with a clear incentive to hire the best teachers available. As shown in Table 3, private schools employ many unlicensed instructors. Although most Catholic school teachers are certified, barely half of the teachers in other private schools are. The proportion of unlicensed teachers is particularly high among secular schools, which cannot rely on a clientele attracted by religious instruction but must compete primarily on the basis of educational quality. By hiring unlicensed teachers, these schools have increased the proportion of faculty who graduated from selective colleges and universities, as shown in Table 4.

It may be wondered whether private schools hire so many unlicensed teachers because their salaries (about 60 percent of those in the public sector) are too low to attract enough licensed applicants. This is not the case. In fact, the highest share of unlicensed faculty is found in the secular schools, which generally pay more than private schools with a religious affiliation.

All this might show only that unlicensed and alternate route teachers do well in schools serving an affluent clientele. Whether an untrained teacher should be put in

Table 3. Teachers Certified in Primary Teaching Field as a Percent of All Teachers[a]

	Public School Teachers	Private School Teachers		
		Catholic	Other Religious	Non-Religious
All Teachers	95.9	73.6	50.2	55.9
Elementary	96.7	77.1	51.9	49.2
Secondary	94.8	67.7	46.4	35.1
Combined	96.0	72.2	49.6	62.8

[a] **Source:** *Ballou and Podgursky, 1997.* Catholic school teachers who have never been married are excluded from these calculations, in order to avoid counting members of religious orders.

Table 4. Percent of Teachers Who Graduated from Selective Colleges and Universities[a]

College Selectivity:	Public	Private Religious			Private Non-Religious		
	All	Certifd.	Not Certifd.	All	Certifd.	Not Certifd.	All
Most Competitive	1.0	.9	2.4	1.4	3.4	14.6	7.9
Other Selective	5.4	4.1	5.7	4.6	9.8	15.0	11.9
Total Selective	6.4	5.0	8.1	6.0	13.2	29.6	19.8

[a] **Source:** *Ballou and Podgursky, 1997.*

a classroom where the disciplinary and pedagogical challenges are greater is another matter.[31] However, many of the staunchest supporters of alternative certification are found in urban school systems. Administrators and educators familiar with the needs of these students are adamant in insisting that the great majority of the graduates of teacher education programs are ill-prepared to work in these systems and that alternate routes are a vital source of supply.[32]

Teach for America is an alternate route program that places liberal arts graduates without education course work in public school systems facing a shortage of conventionally prepared applicants. Each year 450-500 Teach for America corps members enter public school classrooms, most in poor rural communities or inner cities. The response of administrators in these schools has been extremely positive. Three-quarters of the principals responding to a 1997 survey rated TFA instructors superior to other beginning teachers.[33] Almost two-thirds rated them above average in comparison to all faculty, including veteran teachers. Almost nine out of ten indicated they would hire a TFA instructor again. Responses on parent and student surveys were also very positive.

Several other studies have compared alternate route instructors to conventionally licensed teachers on the basis of assessments by supervisors or classroom observers. None of these studies is definitive: some do not carefully control for other factors that could influence ratings, and sample sizes are often small. The preponderance of the evidence shows, however, that supervisors and other observers judge alternate route teachers to be at least as effective as conventionally trained instructors.[34] Other investigators have compared scores on teacher examinations. Most studies show no difference between alternate route and conventionally trained instructors; where there is a difference, it tends to favor teachers who entered through the alternative programs.

Texas is another state that has made extensive use of alternative certification. In 1996-97, 14 percent of the newly certified teachers in the state came through alternate routes. Average scores on the state's licensing examination were higher among the alternate route candidates, and a greater percentage passed on the first try. Alternate certification was a particularly important source of minority teachers. Thirteen percent of the alternate route teachers were black and 28 percent Hispanic. (The corresponding figures for traditionally trained teachers were 6 and 21 percent, respectively.)[35]

Opponents have disparaged the professionalism of teachers who enter by alternate routes. Again, however, the data fail to support these claims. Attrition among alternate route teachers has generally been no greater than among other new teachers in the same systems.[36] Attitudes toward teaching expressed by alternate route teachers compare favorably with those held by conventionally trained instructors. In a 1992 survey of persons who had inquired at the U.S. Department of Education (and selected other sites) about alternative certification, nearly seven out of ten indicated that value or significance of education to society was one of the three main reasons they wanted to teach. By contrast, only 32 percent of public school teachers who participated in a comparable 1990 survey cited this as a reason for entering teaching, and only 38 percent indicated it was an important factor in their decision to remain a teacher. Conventionally prepared teachers were substantially more likely to respond that job security and long summer vacations had influenced their choice of career.[37]

To summarize, the evidence on alternative certification and employment practices in the private sector fails to support the notion that preservice professional education is an indispensable prerequisite for successful teaching. It may help; indeed, nearly half the respondents to the aforementioned survey indicated that education courses were fairly useful in training people how to teach or instruct students. Another 18 percent found them very useful. However, nearly three-quarters believed that the ability to teach had more to do with natural talent than with college training. The percentage was higher still among those who were actually teaching (80 percent).

Costs of Regulation

As the foregoing discussion shows, reforming teacher education in line with the recommendations of the Holmes Group and the NCTAF is unlikely to improve teacher preparation significantly. Still, as there is some evidence that teachers find education courses useful, why not proceed with reform in the hope that something good will come of it? What harm can it do to try?

The answer is twofold. First, licensing and accreditation erect barriers to entry that discourage talented individuals from becoming teachers. These barriers deter teachers now, under the current licensing regime. The deterrent will be greater still if it becomes more costly and time-consuming to acquire a license. Second, reforms that empower organizations of professional educators to determine accreditation and licensing standards can stifle innovation and increase the likelihood—already great—that teacher education will be shaped by ideology rather than solid research.

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NCATE presently denies accreditation to 18 percent of programs on a first application. Although many of these programs are later approved on appeal or a subsequent review, it is reasonable to suppose that if graduation from an accredited program is made a condition of licensure, some of these programs will be forced to close. Students who would have enrolled in these institutions will have to go elsewhere if they wish to teach. Some no doubt will. But the capacity of other programs to absorb them may be constrained, particularly if accredited programs are expected to meet other expensive standards established by NCATE regarding the ratio of students to faculty, the presence of full-time tenured faculty engaged in research, and program autonomy (which requires hiring more administrators, staff, etc.). In addition, some of those who now study education will not seek new schools, in part because their latent interest in teaching is never awakened. A teacher education program serves more functions than the delivery of training. It is a source of information for students who want to know more about teaching careers. It provides counseling and advising. Activities of education faculty and students may arouse the curiosity of other students who had not initially considered careers in teaching: a certain amount of word-of-mouth recruitment that occurs on a campus with a teacher education program will not take place if that program shuts down.

The unions have a clear interest in restricting entry to the profession, creating shortages of licensed personnel that can be used to pressure states and local school boards to raise salaries.

Even if the programs denied accreditation are uniformly weak, closing them can cost the profession some talented teachers. Student populations are heterogeneous: the dispersion of licensing examination scores *within* most teacher education programs in Missouri is nearly as great as the dispersion over the entire state.[38] In the college with the highest failure rate, the dispersion in scores actually exceeds that for the state as a whole. Thus, even in this program an appreciable number of students did well on the exam. There are capable prospective teachers in the poorest programs.

Obviously, the harm is greater when good programs are forced to close. The principal culprit here is cost. Complaints about the cost of preparing documentation for NCATE are common.[39] However, it is probably the expense of modifying or restructuring a program to make it acceptable to NCATE that is more threatening to small liberal arts colleges. In such institutions, education methods courses are often taught by adjunct faculty with no responsibilities for research. There may be no department of education, only a non-degree program staffed by faculty from other departments (e.g., psychology). Such institutions have difficulty meeting NCATE standards concerning the qualifications and responsibilities of professional education faculty and the autonomy of the program.

In the past, faced with the opposition of liberal arts colleges and other small institutions, NCATE has backed off proposals to require minimum faculty-student ratios or expenditures per student.[40] This may change if accreditation becomes mandatory.

but even if it does not, the views of organizations like the National Commission and the Holmes Group could influence NCATE's examining teams. Programs that are not prepared to spend heavily on teacher education might therefore be in jeopardy.

This is more likely given the special interest groups represented in NCATE. The two major teacher unions are particularly influential. They provide financial support and through their positions in the governance structure help to shape the council's policy.[41] The unions have a clear interest in restricting entry to the profession, creating shortages of licensed personnel that can be used to pressure states and local school boards to raise salaries. Recent history shows that the unions will use their influence to reduce the number of accredited programs. In the mid-1970s, the NEA obtained more power within NCATE's governing bodies and greater representation of teachers on examining teams. The proportion of programs denied accreditation subsequently doubled, from one in ten before 1973 to one in five throughout the rest of the decade.[42]

There is no question that prolonged preservice training would deter many if not most of the individuals who now enter through alternate routes.

NCATE revised its standards for accreditation in 1987 and again in 1995. The council has announced that still another revision is underway ("NCATE 2000"). Under the new system, organizations representing subject disciplines will have a greater role in accreditation decisions. These organizations include the National Council of Teachers of English (NCTE), a constituent member of NCATE that has been a vigorous proponent of child-centered instruction, including whole language instruction for reading in the primary grades. The NCTE's recommendations for language instruction represent the virtual antithesis of current efforts to set clear, attainable standards for student achievement and to hold students and their teachers accountable for meeting these goals. For example, at its 1993 annual meeting, the NCTE approved a resolution calling on English teachers to refrain from grading student writing. The rationale offered by one of the sponsors shows both the influence of the child-centered philosophy and the categorical thinking of the true believer.[43]

> Grading serves no educational purpose. Students have to learn to take responsibility for deciding what they want to do with their own writing, and the whole relationship is undermined if in the end you say, 'B.'

As part of the Goals 2000 education initiative, the federal government solicited national standards for English-language arts curricula from the NCTE and the International Reading Association (another NCATE member organization). Public reaction to the resulting guidelines, issued in 1996, was one of dismay mixed with scorn. As a *New York Times* editorial put it:

> Given their professional credentials, these two groups could have produced a clear, candid case for greater competence in standard English, with its ample vocabulary and its simple yet supple grammar. Instead, the guideline writers

> quickly vanished into a fog of euphemism and evasion. Nowhere in their list of 12 basic rules will you find the prescriptive verbs "should" or "ought." Simple declarative sentences are equally hard to find. The rules ooze with pedagogical molasses, as in No. 5: "Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes." What, pray tell, are "writing process elements"?[44]

Another NCATE constituent organization is the National Council for Teachers of Mathematics, which, as we have seen, has issued controversial standards for the teaching of mathematics. California, which adopted a curriculum based on the NCTM standards in the 1980s, subsequently replaced it with a more traditional program. The state's action was due in large part to the dismal performance of students on the state's mathematics assessment. Requiring that teacher preparation programs be accredited by NCATE could put organizations like the NCTE and the NCTM in a position to insist that English and mathematics teachers be trained in methods of dubious educational value. The result may be to stifle innovation by denying educators the opportunity to try alternative ideas. Instead, the prevailing orthodoxy within organizations like the NCTE and the NCTM would acquire the force of law, reducing the pressure on these bodies to support their prescriptions with solid research.

The reforms advocated by the Holmes Group and the NCTAF raise entry barriers to the profession by making it more time-consuming and expensive to acquire a license. It has been estimated that even a modest increase in preservice training—requiring a fifth year of study— would double the cost of becoming a teacher.[45] These reforms will deter many individuals from pursuing teaching careers.

Consider first the impact on alternative certification programs. There is no question that prolonged preservice training would deter many if not most of the individuals who now enter through alternate routes. In the aforementioned survey on alternative certification, prospective teachers working outside education cited traditional licensing requirements more often than any other reason for not seeking a teaching position. When asked why they had not applied to a traditional teacher education program, time and expense were the most common answers.[46]

Career-changers are not the only prospective teachers who will be affected. Prolonging teacher education will deter undergraduates who are wavering between teaching and other options, since any increase in the requirements for a teaching license leaves less time for courses that will be helpful if they end up pursuing other careers. This reform will therefore tend to screen out (by their own choice) prospective teachers with the interest and ability to enter other professions. The effect is precisely the opposite of other reforms intended to improve teacher recruitment, notably increases in teachers' salaries. It is the purpose of a pay increase to induce capable persons wavering between two careers to choose teaching. By contrast, raising licensing requirements has the perverse effect of discouraging individuals with attractive alternatives to teaching.

Teach for America shows that many young people are drawn by the prospect of teaching without first spending a year or two taking professional education courses. Only 22 percent of the corps members who arrived for summer training in 1997 indicated that they would have pursued a teaching career through the traditional route, had they not joined Teach for America.[47] Moreover, many Teach for America corps members remain in teaching after their two-year enlistment period ends. Of the 784 former corps members who responded to a 1998 alumni survey, 53 percent were employed in education, the great majority as classroom teachers.[48] This shows the importance of giving talented persons an opportunity to find out whether teaching is the right career for them without putting high barriers to entry in their way. Prolonged preservice training discourages individuals who want to try teaching before making a lifelong commitment to it, even though high rates of attrition from the profession make this an eminently rational strategy.

Organizations that would play a leading role in accreditation have endorsed educational methods of dubious value.

Finally, there are some individuals who, intending from the first to teach only for a few years, are clearly discouraged by the requirement that they earn a credential that has no value outside the teaching profession. Yet writing off their contribution because they will not spend their entire careers as teachers would be a mistake, as researchers at the Harvard Graduate School of Education have noted.[49]

> In a society with abundant opportunities for talented college graduates and a tradition of labor market mobility, it will never be possible to persuade two million of them to teach their whole lives. Public rhetoric that implies personal failure when a teacher leaves the classroom after successfully teaching for a number of years may deter many of them from ever setting foot in a classroom.

According to a consortium of teacher educators from sixteen of the most prestigious colleges and universities in the northeast, terminating undergraduate programs in education and replacing them with post-baccalaureate programs would significantly reduce the number of students entering teaching from selective liberal arts colleges. The consortium therefore opposed the recommendations of the Holmes Group, supporting instead certification options for students desiring to teach directly upon graduation.[50]

Implications for Policy

The preservice training required of teachers represents a barrier to entry that deters many from pursuing a career in education. This is true under the current system; the problem will certainly grow worse if regulatory reform raises the bar. Thus, any improvement among teachers who complete the new requirements must be weighed against the lost talents of those who would have become teachers under the current system but are deterred from pursuing teaching careers when additional hurdles are put in their way. Too much is unknown about the impact of reform to quantify these things with precision. But the evidence strongly suggests that the costs may be substantial compared to the benefits.

First, there is little indication that the reforms under consideration would significantly improve teacher training. Graduates of NCATE-accredited programs appear to be no better than teachers who have graduated from other programs. There are doubts about students' capacity to benefit from longer preservice programs, given the importance of learning on the job. Organizations that would play a leading role in accreditation have endorsed educational methods of dubious value, raising further questions about the benefits of reform. In addition, teaching ability appears to be much more a function of innate talents than the quality of education courses. Teachers themselves tell us that this is so. We come to similar conclusions when we examine the determinants of scores on teacher-licensing examinations. Finally, teachers who enter through alternative certification programs seem to be at least as effective as those who completed traditional training, suggesting that training does not contribute very much to teaching performance, at least by comparison with other factors.

In these circumstances, the primary focus of policy should be the recruitment of capable persons into teaching. It is more important how teachers are *selected* than how they are trained. Schools of education have not demonstrated that they are able to turn mediocre students into effective teachers. If they could, our conclusion might be different. As matters are, efforts to improve teacher training should not interfere with the more critical task of raising the quality of the pool of prospective teachers.

This is precisely where the reforms under consideration fail. They offer little protection to the public from incompetent or corrupt local school administration. For example, even if it were true that programs accredited by NCATE were superior to non-accredited programs, many graduates of the former have weak preparation in their subjects and receive low (albeit passing) scores on licensing tests. Requiring NCATE accreditation would do nothing to prevent an undiscerning school district from hiring the weakest graduates of the weakest programs that meet NCATE's undemanding standards.

On the other hand, districts that seek out better teachers will find the pool of promising applicants reduced, not merely in size but in quality, as new barriers to professional entry discourage persons of above-average ability from pursuing careers in education. As a result, the limited benefits realized by these reforms come at too great a price. Public schools are deprived of the chance to hire capable individuals who are deterred by the high costs of obtaining a license, solely to ensure that the teachers they do hire have completed an "improved" program of professional education of comparatively modest value. This is not an appealing trade-off, particularly if

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there exist other policies that can achieve reformers' legitimate goals at lower cost.

Testing Teachers

Organizations that advocate the reform of teacher education, such as the National Commission on Teaching and America's Future, also endorse the use of examinations and other assessments to determine when teachers are ready to enter the classroom. Their support for a hybrid system should not obscure the fact that the two approaches to licensure are conceptually and practically distinct. Licensing on the basis of test results represents an important alternative to transcript-based licensing. In a test-based system, course work would become subsidiary to the examinations. Smarter students and born teachers could get through faster. By eliminating superfluous requirements—if in fact that also happens—licensing based on demonstrated competence could significantly lower the entry barriers that deter capable persons from becoming teachers.

Testing provides a flexible, relatively inexpensive way for teachers to demonstrate knowledge of subjects in which they do not hold a college major or minor.

Testing teachers' knowledge of their subjects is not a new idea: twenty-two states already assess subject knowledge, mostly through standardized, multiple-choice tests. Some of these tests are not rigorous and the scores required to pass are low. However, these are not objections to testing per se. With decades of experience developing similar tests for student achievement, test-makers have acquired the expertise to construct examinations that provide an accurate, comprehensive appraisal of teachers' subject knowledge. Sophisticated methods are available to screen items for cultural bias. Compared to the alternative—counting course credits— standardized tests afford a much more uniform, consistent basis for determining whether prospective teachers know their subjects.

In addition, testing provides a flexible, relatively inexpensive way for teachers to demonstrate knowledge of subjects in which they do not hold a college major or minor. As a result of the proliferation of interdisciplinary studies and the overlap between traditional fields, many college students receive substantial training in subjects in which they neither major nor minor. Area studies and foreign language majors study a great deal of history. Economics majors learn a lot of applied mathematics. Students of international relations receive a background in history, geography, and comparative political systems. Communications studies majors, depending on their area of concentration, may have learned a great deal about journalism, psychology, sociology, and current events. This blurring of boundaries between traditional fields poses considerable practical problems for transcript-based licensing. By contrast, the maker of a subject examination can be indifferent to what graduates have studied, focusing instead on what they are expected to teach. Although the tests in use have not reached this level of specificity, in principle there could be a test for each school subject. Thus, a teacher who sought to teach beginning algebra could demonstrate the required competency in the subject by passing a suitably designed algebra test. An English teacher with a knowledge of history (whether or not there is anything identifiable as a history course on her transcript) could qualify for a license by passing the history exam.

Given the modest correlation between test scores and teaching performance, it is inevitable that there will be individuals with mediocre test scores who would nonetheless be effective in the classroom.

Teachers' interests change and develop over the course of their careers. A licensing system should be flexible enough to recognize new areas of expertise. In 1986, the Carnegie Forum on Education and the Economy articulated a vision of a profession marked by deep intellectual curiosity and ambition.[51]

> Teachers should have a good grasp of the ways in which all kinds of physical and social systems work; a feeling for what data are and the uses to which they can be put, an ability to help students see patterns of meaning where others see only confusion.... They must be able to learn all the time, as the knowledge required to do their work twists and turns with new challenges and the progress of science and technology.... We are describing people of substantial intellectual accomplishment.

When public schools succeed in recruiting teachers of this caliber, the licensing system should not erect obstacles that prevent them from teaching subjects in which they have developed knowledge and expertise, solely because they have not earned the right college credits.

The more difficult issue in subject matter testing is where to draw the cutoff score. Everyone agrees that teachers must know something about the subjects they teach: the hard question is, how much? Research shows that there is a positive correlation between teachers' knowledge of their subjects and the achievement of their students, but the correlation is not very high.[52] Many things affect teaching performance besides how well the teacher understands the subject. Given the modest correlation between test scores and teaching performance, it is inevitable that there will be individuals with mediocre test scores who would nonetheless be effective in the classroom. (And, conversely, some who pass the exam should not teach.) The problem with an examination-based licensing system is that it does not permit school systems to consider all of the relevant information when filling vacancies. If a prospective teacher falls even one point short of a cutoff score on an examination, districts are not allowed to consider any other factors to determine whether this individual might be an effective teacher.

Proponents of subject matter testing often argue that the purpose of the test is only to screen out teachers whose knowledge of the subject falls below the minimum level necessary to teach effectively. They acknowledge that there is more to teaching than subject matter knowledge, but they maintain that below some minimum knowledge of the subject a teacher cannot be effective, no matter what his or her other qualities. They are right, of course. Someone who knows nothing at all about a subject cannot teach it. But this does not answer the question: what is the *minimum* necessary for effective teaching? In fact, no one knows. This is not surprising. It is exceedingly difficult to specify this cutoff, for in drawing such a line, we are saying that no one who scores below it can be an effective teacher, that there is no possibility of compensating with resourcefulness, charisma, energy, humor, or any of the other personal traits that can contribute to good teaching. The difficulty of establishing such a cutoff has led many educators to argue that licensing decisions should not rest on the results of any one assessment, but that subject matter tests must be weighed with other factors in deciding whom to license. Whether this is a better policy depends, however, on the quality of the other information available to the licensing authority.

Assessments of Teaching Performance

Until recently, knowledge of how to teach has been assessed in the same way as knowledge of what to teach: through standardized written examinations. Such tests of pedagogical knowledge have come in for a great deal of well-deserved criticism. Because so many teaching decisions are highly context-specific, test items regularly fail to assess examinees' knowledge in a meaningful way. Either the situation is so simplified that context is relatively unimportant—but then the answer is obvious—or important contextual facts are omitted and the correct answer is unclear.

Authentic assessment is time-consuming and expensive. There are doubts about the objectivity of evaluators and the reliability of their ratings.

In response, the Educational Testing Service, which produces the National Teacher Examination and the Praxis series, has begun development of more open-ended, constructed response questions on teaching knowledge.[53] As envisioned, these questions will pose a richly described problem situation to which test takers will respond by writing a short essay. Trained readers will then grade these essays. Still, many questions remain about the consistency of graders' scores and the relationship between test results and eventual teaching performance. Even at best, examinations of this type provide only a partial measure of teaching ability. They assess professional knowledge. They do not measure affective traits. Thus, when such examinations are used for licensing teachers, they exhibit the same drawbacks as subject matter tests. Because they measure only some of the attributes of a good teacher, licenses may be denied teachers who have other, compensating attributes and abilities.

Proponents of licensing reform, concerned about the triviality and irrelevance of written examinations, have argued the need for authentic assessments based on performance under classroom conditions. With this goal in mind, one of the leading organizations in the reform movement, the National Board for Professional Teaching Standards (NBPTS), has issued standards for what effective teachers should know and be able to do. Among these standards are the following representative examples:[54]

- Teachers use a variety of methods and materials to promote individual development, meaningful learning, and social cooperation.
- Teachers use their knowledge of child development and their relationships with children and families to understand children as individuals and to plan in response to their unique needs and potentials.
- Accomplished teachers create a caring, inclusive and challenging environment in which students actively learn.

As the examples show, the language of the board's standards is very general. The lack of specificity is, to some extent, a reflection of the very problem that makers of standardized tests confront: teaching decisions are highly context-specific. Were the standards of the National Board more precise, they would run the risk of being overly prescriptive. The difficult task of translating these vague guidelines into performance-based assessments for new teachers has been taken up by another organization, the Interstate New Teacher Assessment and Support Consortium (INTASC). Examples of these assessments are portfolios, laboratory exercises and simulations, and classroom observations.

Performance-based assessments have become extremely popular in education circles. NCATE has announced its intention to use performance-based assessment to judge the quality of a program's graduates in the next revision of its accreditation standards. It is naive, however, to suppose that these instruments are popular solely because they correct defects in traditional standardized tests. Assessment instruments like portfolios answer a host of other fashionable concerns, such as the desire for examinees to become active discoverers and producers of their own knowledge (an echo of the constructivist paradigm).[55] Such assessments are also significantly less threatening to examinees. Standards are fuzzy; there is the comforting thought that no one right answer exists; allowances are made for different cultural perspectives. Teachers are likely to be given the opportunity to portray themselves in the best possible light by choosing the materials for their portfolios or the lessons they will be observed teaching.

In addition, authentic assessment is time-consuming and expensive. There are doubts about the objectivity of evaluators and the reliability of their ratings. When assessments are conducted in the field, it is difficult to control for a variety of factors that affect performance. Yet the high cost of conducting laboratory trials means that subjects are typically evaluated on a relatively small number of tasks, also compromising reliability. In addition, little is known about the predictive validity of these types of assessments and whether they are superior in this regard to more traditional ways of testing teachers.[56]

Because the results of performance assessments are confidential and the methods used by the National Board are proprietary information, it is difficult to learn much about the details of performance-based assessment. Fortunately, there are a few exceptions. One is a pilot project undertaken in Maine to explore the feasibility of replacing transcript-based licensing with a competency assessment. Following the lead of the National Board and INTASC, participating teacher educators established standards for what a beginning K-12 teacher should know and be able to do. Supervisors of student teachers were then asked to write up classroom observations, indicating whether these standards had been met. Several of these assessments were included in a report on the pilot program to the State Board of Education.

As the following excerpts show, supervisors found it difficult to fit their observations into the framework of the standards. Often the connection between the standard and the teacher's actions was unclear. Fairly trivial actions were accepted as evidence that the standard was met. Supervisors tended to write about things they liked even if the behavior was unrelated to the standard in question. In some cases they grasped for something that seemed to apply, however tangentially.

For example, the following report was submitted to show that a student teacher had met Standard VIII: *Understands and uses a variety of formal and informal assessment strategies to evaluate and support the development of the learner.* (All excerpts are from State of Maine Advisory Committee on Results-based Initial Certification of Teachers, *Final Report to the State Board of Education and the Commissioner of Education*, 1997.)

> The setting for this description is an art classroom in an urban high school in southern Maine. At the beginning of class, Janice, an Art Education intern... hands out a media literacy pop quiz consisting of a magazine advertisement and a blank sheet of paper to pairs of students as they settle in at their tables. She directs their attention to questions written on the board: Before you get started on your masks, work with your partner to answer these questions. They relate to the lesson on advertising. Put the finished papers here on my desk. This quiz is a test of knowledge gained in a previous media literacy lesson.

This teacher has merely administered a pop quiz on material covered earlier. There is only one assessment strategy in evidence here, not a variety, and nothing to indicate that the quiz was particularly well-constructed or contributed to student learning, as stipulated by the standard. Students were allowed to prepare answers in pairs, suggesting that this teacher was trained to use a pedagogical method currently in fashion, cooperative learning. But if the pop quiz is intended as an assessment rather than merely a learning experience, her judgment is questionable. Even staunch proponents of cooperative learning usually stress the importance of maintaining individual student accountability.

The following report was offered to show that a student teacher met Standard I: *Demonstrates a knowledge of the central concepts, tools of inquiry, and structures of the discipline(s) she or he teaches.*

> Student teacher, J.N., taught science, specifically five microganisms [*sic*], to a heterogeneous grade 5/6. She included in her instruction guidelines: scientific journaling (emphasis on precision, accuracy of drawing and writing), how to share materials in a manner that respects both the things themselves and the people using them, and several opportunities to work with five self-selected and interested *first grade partners* (emphasis in original). J.N. developed an equitable and innovative rubric including clear guidelines for group work, clearly defined outcomes for the two and one-half hour laboratory which used microscopes, slides, live one celled organisms, and an electron microscope that J.N. had obtained from her own home school district through a successful co-authored grant application. Using a previously developed learning style profile of the class, J.N. made sure that every student had an opportunity to succeed based on lesson objectives that she developed from a wide variety of assessed student strengths.

The writer is clearly impressed with the performance of this student teacher, and indeed, this may have been an excellent lesson. But the things that have impressed the supervisor have little to do with the standard, which concerns mastery of subject matter. Instead, the supervisor focuses on teaching methods (how clear the instructions were, how the students worked cooperatively, how all students had a chance to succeed) and the materials used in the lesson. The only part of this description that relates to the standard is the second sentence, where the supervisor remarks that students were taught the importance of keeping precise, accurate records in scientific work.

The following submission pertains to Standard II: *Demonstrates the ability to integrate other disciplines, their concepts, tools of inquiry, and structures of other disciplines with the discipline she or he teaches.*

> Student teacher, G.H., taught social studies to an eighth grade class, developed in concert with his mentor teacher, a unit on immigration. G.H. asked students to design and illustrate family shields...of the countries from which the students were traveling to the U.S. Students researched their countries of origin, presented oral reports on their reasons for leaving, wove together fact and fiction into powerful stories of courage and pride in who they were. G.H. feels that eighth graders, particularly, grow from imagining themselves to be what they may not yet be in reality; for example, one day students were creating their visas. A boy barely 5'2" described himself as a 6'4" 229 lb Russian from the Ukraine. G.H. also has begun an inventory of what motivates these students and which of the multiple intelligences (proposed and described by Howard Gardner and his team) best fits their emerging intellectual and social strengths. Linked to those multiple intelligences inventories G.H. has produced a list of choice opportunities for each student to use in developing and presenting knowledge of their (sic) native culture.

> In addition, immigrants/students kept a journal of the events of their journey. In the journal they answered teacher-generated questions about conditions of passage, problems and dilemmas encountered, and joys and sorrows witnessed and lived through.

Apparently the writer believes the student teacher has met Standard II because he has integrated art (designing shields) and creative writing (stories, journals) into the teaching of social studies. These may have been sound teaching devices, but their relation to the standard is not clear, as neither appears to be a concept or tool of inquiry from another discipline. For example, were any literary concepts introduced? Did the teacher even check student journals for grammar, punctuation or style? Successful integration of methods from other disciplines also requires that they not be overused. But this question slips between the cracks in this report: we cannot tell if the teacher relied too much on student-produced art and fiction at the expense of more conventional materials.

Our comments are not meant to disparage the performance of these new teachers or the conscientious efforts of supervisors to carry out the complex task they were given. Rather, this discussion is meant to bring out two things: how hard it is to make standards like those of the National Board the basis for meaningful performance assessments, and how difficult it is for outsiders reading these reports to ascertain whether teachers truly possess the desired competency. Supervisors had trouble determining the kind of teaching behavior to which each standard applied. There was no yardstick to measure whether a standard had been met. If the supervisor could identify something that seemed to fall under the right heading, that was good enough. Ultimately, supervisors used the standards as a very loose framework for describing things the student teachers did that the supervisors liked. As a result, procedures of this kind are only too likely to reproduce the flaws of the present education system. Teachers who use trendy pedagogical techniques will be applauded. Ideological biases will enter supervisors' assessments and influence licensing decisions.

Authentic assessments are apt to be perfunctory and superficial unless evaluators have both the talent and motivation to look beyond the vague standards given them and conduct a truly probing analysis of a candidate's performance.

There is no reason to think that this is an isolated example, somehow atypical of performance-based assessments. Standards were patterned on those of INTASC and the National Board; evaluations were carried out by experienced teachers. Given the nebulousness of the standards, much depends on how these guidelines are interpreted, the perspicacity and professional judgment brought to the supervisory task, and the ability to convey in writing a full picture of the candidate's strengths and weaknesses. Authentic assessments are apt to be perfunctory and superficial unless evaluators have both the talent and motivation to look beyond the vague standards given them and conduct a truly probing analysis of a candidate's performance.

Implications for Policy

Performance-based teacher assessments are still in the process of development and it is premature to conclude that they cannot play a useful role in teacher licensing. Clearly, a comprehensive, dependable assessment of teaching ability could be of great value. It would create the possibility of placing teacher licensing on an entirely different basis: if competency could be assessed directly, states could (and should) dispense with all education prerequisites (save, perhaps, that teachers hold a college degree). Teaching positions would be open to those who demonstrate the ability to do the job. To the extent that education courses help prospective teachers acquire the skills and knowledge that a competent teacher should possess, schools of education would continue to attract students and play an important role in teacher preparation. But school districts would also be free to hire teachers with unconventional backgrounds: born teachers as well as individuals who learned to teach in other settings, such as private schools, the military, tutoring centers, and the human resource departments of large corporations.

At present, however, we are not in this best of worlds. The available instruments for assessing teachers' knowledge and skills are incomplete: they measure some things that contribute to effective teaching but not all of them. Subject knowledge can be measured with considerable accuracy (even if some of the tests in current use do not). Tests of professional knowledge do not possess the same validity. Other important attributes of a good teacher, including a wide range of affective characteristics, are not measured at all.

For all their imperfections, it is better to use these tests than to allow grossly incompetent or corrupt administrators to hire anyone they like. The problem with high-stakes testing becomes apparent when we consider the districts—presumably the majority—in which conscientious administrators seek to hire the best available applicants. As noted above, there is evidence that hiring procedures are flawed and that often the best choices are not made. But this is not to say that administrators are wholly inept. They are using some of the information available to them to decide who will be an effective teacher, even if they are not using all of the information in the most efficient way. The crux of the problem is this: when teacher tests are used for licensing decisions, districts are effectively compelled to discard information about prospective teachers who scored below the cutoff. Yet districts enjoy substantial advantages over outside authorities when it comes to assessing teaching ability. Many teachers are hired in districts where they have done student teaching or served as substitutes. In such cases, principals will often have first-hand knowledge of teaching performance based on classroom observation as well as feedback from other teachers, parents, and students. This puts the principal in a position to make judgments about aspects of teaching performance that licensing exams measure

> *If we raise the passing score on the exam, we will get teachers who know more and more about their subjects, but there is not much reason to think they will be better in other respects.*

poorly, if at all. To a lesser extent, the same is true when schools have candidates teach a sample lesson and put them through a rigorous set of interviews. On top of this, school officials will have knowledge of local needs and circumstances bearing on an applicant's suitability that external examiners cannot begin to match.

We have come back to a problem discussed above in connection with the reform of teacher education. Licensing restricts districts' choices. This is socially beneficial when a district would otherwise make extremely poor hiring decisions. But to achieve this goal, state licensing ties the hands of all other districts as well. The impact is most adverse where administrators have the greatest trouble recruiting in the first place. These districts, often serving poor and working class children, hire many teachers who are unable to obtain jobs in systems with higher salaries and better working conditions. Such teachers will, on average, lie closer to the cutoff on any licensing examinations that are given: they are the marginal candidates who just get by. Since the licensing test is an imperfect indicator of teaching ability, a school system that hires such teachers will find it beneficial to be allowed to consider applicants who did not pass the licensing test, who are marginal on the other side of the line. Because the district has information about teaching ability that differs from that provided by the test alone, it will correctly find some of the marginal (but failing) applicants superior to the marginal (but passing) applicants it must otherwise hire. This other information need not be perfect—indeed, districts might not be much better than the test at identifying who will teach effectively. The key point is that this information differs from that provided by the test. Teacher recruitment is impaired when administrators are compelled to ignore this information and hire teachers instead for the sole reason that their test scores are slightly higher.

Because local administrators are in a better position to evaluate teacher candidates, the principal focus of policy should be improving their performance, not revising standards for statewide licensing.

Advocates of stricter testing might admit that this is correct, yet argue that it misses the point. A licensing system will inevitably screen out some candidates who would have been effective, but it is worth paying this price to ensure that all teachers meet an acceptable minimum standard of proficiency. Thus, if the standards are set high enough, we can be assured that districts will be hiring good teachers—perhaps not as good as some might have obtained if standards were relaxed, but good nonetheless.

The flaw in this argument is the assumption that policymakers can set a floor on teacher quality using the imperfect instruments available. They cannot. Licensing on the basis of a subject matter test ensures only that teachers know their subjects, not that they are able to do all the other things required of an effective teacher. If we raise the passing score on the exam, we will get teachers who know more and more about their subjects, but there is not much reason to think they will be better in other respects. Meanwhile, as the passing score rises, we eliminate from consideration a growing number of teachers who are effective by virtue of other, untested characteristics.

Policy Directions

In many respects, the conclusions of the preceding section echo those of this section. Teacher licensing is not a powerful tool for upgrading the work force: the information available to a licensing board or agency does not allow it to predict with sufficient accuracy who will be an effective teacher and who will not. Because local administrators are in a better position to evaluate teacher candidates, the principal focus of policy should be improving their performance, not revising standards for statewide licensing.

If all the groups interested in providing an alternative to traditional public education were given an opportunity to compete on equal footing with the public schools, there are many urban and suburban communities in which public schools would face a substantial competitive threat.

In some respects, this is hardly a surprising conclusion. The purpose of licensing is to protect the public from poor decisions by school administrators. Yet unlike other licensed occupations, where practitioners in the private sector sell their services to private individuals, both teachers and administrators are state employees. Thus, teacher licensing amounts to a curious situation in which the state licenses some of its employees (teachers) because it does not trust other employees (administrators) to carry out their jobs properly. One might well suspect there are better solutions to this problem.

Improving Accountability

Public school administrators must face appropriate incentives and sanctions to ensure that staffing decisions (indeed, all decisions) are made in the best interests of the public. Generally speaking, there are two ways this can be achieved. In the private sector, poor performance is disciplined by the market, as parents exercise their right to choose another school. Strengthening parental choice is one way to enhance accountability within public education. Alternatively, schools can be held accountable by setting standards for student achievement and monitoring school performance through curriculum-based examinations. Recently, there has been growing interest in a third way, in which school districts contract with vendors for the provision of educational services, an approach that combines market competition (among vendors) with accountability, represented by the contract and its possible non-renewal.[57] Charter schools also represent a hybrid of this type. They are subject to market discipline, but they are also held accountable through their charters, which may not be renewed if the school fails to achieve its objectives.

Establishing meaningful accountability is not easy. As critics of school choice have pointed out, choice disciplines schools only to the extent that parents are willing and able to exercise it responsibly. In addition, without a large number of options to choose from, many students will remain in poor systems where the absence of a significant competitive threat will perpetuate business as usual. Holding administrators accountable for student achievement also raises difficult practical issues. How is allowance to be made for factors over which administrators have no control? Who is accountable for the achievement of students who change schools in mid-year, a frequent occurrence in urban systems?

Real as these difficulties are, they are not insurmountable. Evidence from experiments in education reform indicates that both mechanisms can be used to enhance accountability and that schools change as a result.

Systematic study of the impact of choice on the performance of traditional public schools has only begun. However, anecdotal evidence confirms what has often been observed in other sectors of the economy: faced with competition, even rigid institutions change. An interesting demonstration of this phenomenon occurred in Albany, New York, where a philanthropist offered $2000 toward private school tuition for any child attending the Giffen Memorial primary school, a chronically underperforming school.[58] A sixth of the school's students accepted. The Albany Board of Education, which had initially ridiculed the offer, ended up replacing Giffen's principal, hiring nine teachers, adding two assistant principals, and spending more on books, equipment, and teacher training. This example demonstrates a point that economists have long made about competition: it is not necessary that all consumers be informed decision-makers for market discipline to work. Rather, it is necessary only that a critical minimum of consumers turn to other suppliers. When this happens, firms (or, in this case, a school) will begin to take corrective action. Here the critical minimum was reached by the time one-sixth of the students had chosen other schools.

Holding schools accountable for student achievement strengthens the incentive for school administrators to hire wisely, putting to good use the advantage they enjoy over licensing agencies in evaluating prospective teachers.

One of every ten elementary and secondary students today attends a private school. Many of these schools could accommodate more students. More schools would start up if parents received vouchers that could be used to send their children to the school of their choice, public or private. The rapid growth of private tutoring in the form of after-school programs and contracted-out instructional services (Sylvan Learning Centers, Huntington, etc.) shows that entrepreneurs are ready to respond in varied ways to parents' dissatisfaction with public schools. This entrepreneurial activity is also evident in the charter school movement. From the first school, which opened in 1992, the number of charter schools has grown to 1,100.[59] There would be still more, were it not for inadequate start-up financing, caps on the number of schools written into the enabling legislation, and impediments put in the way by hostile host districts. If all the groups interested in providing an alternative to traditional public education were given an opportunity to compete on equal footing with the public schools, there are many urban and suburban communities in which public schools would face a substantial competitive threat. If market discipline fails to improve school accountability in these communities, it is not likely to be the result of an inadequate response by the providers of services or an inadequate demand for alternatives, but rather because artificial barriers are erected to protect the jobs of those who work in traditional public schools.

Educators in the public schools have long resisted efforts to hold them personally accountable and professionally responsible for student achievement. Even modest merit pay plans are resisted on grounds that too many factors beyond their control influence student achievement. Requiring educators to produce results if they want to keep their jobs would provoke far greater opposition. Nonetheless, there is evidence that high-stakes accountability works. Since 1995, Chicago has pursued an aggressive policy of holding students and schools accountable for performance on tests of basic skills. Students who fail the exams are required to attend summer classes and to repeat grades if their performance does not improve. Junior and senior high schools in which an unacceptably high percentage of students fails basic skills tests are placed on probation and threatened with reconstitution, a process in which administrators and teachers lose their automatic right to stay in the school by virtue of seniority. An outside review board decides who is to stay: the rest lose their jobs and new teams of educators replace them.[60]

This approach has brought results.[61] Test scores have risen for three straight years. Forty percent of Chicago elementary pupils are now at or above the national norm in mathematics, an increase of ten percentage points from 1995. Gains have been almost as great in reading. It is noteworthy that these results have been achieved even though the city's indicators for monitoring performance are the very sort that seem most unfair to educators. No allowance is made for students' incoming level of skills. City officials rejected such a policy on the grounds that schools would then be able to evade accountability. This may be correct. Yet under the current system, a teacher of low-achieving students who manages to improve their test scores (but not enough) can be penalized, while an instructor fortunate enough to have high-achieving students may teach them nothing at all without being held to account. A more balanced approach that puts some weight on students' net gains and some on their absolute level of achievement would provide a better set of incentives.[62]

Holding schools accountable for student achievement strengthens the incentive for school administrators to hire wisely, putting to good use the advantage they enjoy over licensing agencies in evaluating prospective teachers. Such a policy correctly aligns incentives with information: administrators who are in the best position to judge should have the authority to decide who will teach in their schools, reaping rewards if the decisions are sound and suffering consequences if they are faulty.

Although the misalignment of policy is apparent in the way teachers are initially licensed, it is even more evident in policies that protect veteran teachers from dismissal, a clear instance in which the information available to a local administrator is not used. Most public school systems award tenure to teachers after a few years' continuous service. In addition, as public employees teachers are protected against arbitrary dismissal. Districts are required to show "just cause" before teachers can be fired, a stipulation that typically entitles teachers to an administrative hearing with judicial review. Most teacher contracts specify that layoffs be conducted on the basis of seniority. As a result, teachers who have completed a few years of service enjoy an extraordinary degree of job protection.

The number of public school teachers dismissed for incompetence is exceedingly small. The cost of such efforts is a major deterrent: for example, a 1993 survey by the New York State School Boards Association found that the average disciplinary proceeding against a tenured teacher or administrator cost taxpayers $176,000.[63] As a result, it appears that most school districts take such steps only in extreme cases. A review of employment records for all public school teachers in Washington state between 1984 and 1987 turned up only forty-two whose contracts were officially terminated.[64] This is consistent with statistics from other states. Fewer than.6 percent of the teachers in 141 medium-sized California districts surveyed in 1982-1984 were dismissed for incompetence.[65]

By contrast, administrators in the private sector have much greater authority in personnel matters. With the exception of some unionized Catholic high schools, teacher contracts are written for one year and can be renewed or not as the school chooses. There is no tenure. While nonrenewals for unsatisfactory performance are not common, they do occur.[66] Of equal importance is the way private schools handle reductions in staff. With the exception, again, of some Catholic dioceses where contracts are collectively bargained, layoffs are never based solely on seniority. For obvious reasons, private schools seek to retain their most effective teachers, whether senior or not. Over time, this can have a substantial effect on the quality of the workforce. For example, in a single year (1990), the contracts of 1.3 percent of private school teachers were not renewed because of budget limitations, declining enrollments, or elimination of courses.[67] If this year is typical, then over a decade some 10 percent of the private school workforce, many of whom have been deemed less effective than their peers, are put through a competitive screening process in which they must prove themselves to other employers or leave teaching.

Finally, union contracts in many large cities permit senior teachers to transfer into schools with vacancies whether the principal of the receiving school wants them or not. This practice is damaging for two reasons. First, it disrupts efforts to build a cohesive team of teachers at the school level, impeding efforts to hold principals accountable for student achievement in their schools. Second, because transferring teachers generally must have acceptable ratings from their current supervisor, these internal transfer systems create further disincentives for principals to document professional malfeasance. Instead, it is easier to award satisfactory ratings in the hope (or with the understanding) that an ineffective teacher will go elsewhere in the system.

Policy Recommendations

State teacher licensing is a substitute for local accountability. As local accountability improves, licensing becomes less important. Indeed, if school administrators make wise personnel decisions, licensing loses its positive function and merely constrains managerial prerogatives, preventing administrators from hiring the best teachers they might otherwise find.

Proponents of stricter licensing have suggested that it would serve other purposes. For example, some argue that, without high standards for professional training, prospective teachers will choose the easiest route into the profession, attending weak programs with low standards rather than a quality program.[68] But this ignores the incentives facing would-be teachers. Unlike administrators, who are acting on behalf of the public and who must be held accountable in some fashion, prospective teachers represent only themselves. If administrators seek to hire the best available teachers, good training provides its own reward by improving teachers' chances of obtaining the most attractive jobs. Regulations compelling prospective teachers to act in their own interest are unnecessary.

If school administrators make wise personnel decisions, there is little to be said for stricter licensing standards, or indeed, for licensing at all.

This does not mean that weak programs of teacher education will necessarily disappear. Many of these programs are in weak colleges serving, for the most part, weak students. But the fact that some of these students major in education is of no greater concern than the fact that others major in business administration. Public schools are not obliged to hire the former any more than businesses are compelled to put the latter in managerial positions. There is a problem here, of course, but it is not one that teacher licensing can solve. More rigorous licensing and accreditation standards might lead some of these programs to close, but if districts hire wisely, this protection is redundant: either way, weak graduates of these programs will fail to find teaching jobs.[69]

Some proponents of stricter licensing standards have also argued that more capable individuals will be attracted to a profession that is seen to have rigorous entry requirements. If regulations make it harder to become a teacher, the stature and prestige of the profession will rise, which in turn will attract more talented persons. However, those who make this claim have offered no evidence to support it, and the argument appears to be based on wishful thinking. Although teachers regularly complain about the lack of respect accorded them, their biggest concerns in this regard are relationships with students and parents and the amount of time they are required to devote to tasks they consider non-professional. We are aware of no evidence indicating that many capable persons are deterred from teaching careers because they do *not* have to pass rigorous entry examinations or complete protracted programs of professional education.

Some light is shed on this question by a 1985 Louis Harris survey of the teaching work force, in which teachers were asked whether various reforms would help to attract good people into teaching.[70] Although this was the wrong group to ask (the question should have been put to non-teachers), nearly two-thirds replied that requiring new teachers before certification to pass rigorous examinations comparable to other licensed professionals would help a little or not at all. By contrast, nearly 80 percent said that providing compensation to beginning teachers comparable to other professions that require similar training would help a lot. Almost three-quarters were as positive about reducing the amount of time teachers spend in non-teaching duties.

For the present, it is wisest to rely on a mix of different policies, strengthening accountability and incentives where possible, but not omitting other measures that would also improve the quality of the work force.

In summary, if school administrators make wise personnel decisions, there is little to be said for stricter licensing standards, or indeed, for licensing at all. Because administrators have better access than licensing agencies to information about job candidates, the best policy is, first, to ensure that administrators will use this information in the public interest by holding them accountable for school performance, then to remove unnecessary encumbrances on their ability to recruit widely and hire the finest teachers they can find. Moreover, in a system that holds administrators responsible for student achievement, it would make little sense to entrust others with the task of screening teacher candidates. No one else, including a licensing agency, will have the same strong incentive to ensure that appropriate decisions are made. As we have seen, this is of particular concern when licensing relies on the results of performance-based assessments, in which the quality of information is highly dependent on the skill and motivation of third-party evaluators.

However, policy often fails to achieve the best outcomes, forcing us to consider what might be second-best. Clearly, this is the situation we face in public education today. Although there has been progress in empowering administrators and holding them accountable for student achievement, there is a long way still to go. Many institutional barriers remain. Many administrators have developed little skill in teacher selection and appraisal. In many states, new standards for student achievement are too vague or too weak to ensure meaningful accountability. Teacher unions vigorously resist policies that strengthen administrators' powers. Past efforts to enhance accountability have often been highly disruptive, putting school systems through a great deal of turmoil only to achieve, in the end, rather meager results. This has made political leaders reluctant to repeat them. The efforts of several states in the 1980s to test veteran teachers and dismiss those with low scores is a case in point. Even in Chicago, where early indications suggest that reform has had positive effects, city officials have announced that there will be no reconstitutions of schools in 1998-99.

A Policy Mix

For the present, then, it is wisest to rely on a mix of different policies, strengthening accountability and incentives where possible, but not omitting other measures that would also improve the quality of the work force. In this policy mix, what is the role for teacher licensing?

We begin with what licensing policy should *not* be. It should not increase the already substantial power and influence of private organizations of education practitioners. Such organizations include teacher unions as well as bodies like the National Council of Teachers of English and the National Council of Teachers of Mathematics, constituent members of NCATE. Given the clear interest of incumbent teachers in limiting teacher supply, organizations in which unions play a prominent role, such as NCATE, should not be placed in a position in which they can effectively shut down programs of teacher education. Subject specialty organizations like the NCTE and the NCTM have endorsed approaches to teaching that are controversial and of doubtful educational value. Simple prudence suggests that it is unwise to require every teacher education program in the country to meet standards set by these organizations. Instead, policy should promote a vigorous competition in ideas that compels educators to present solid research defending their views on teaching and learning.

In addition, before policymakers resort to regulations that tie the hands of school administrators, they should make full use of less restrictive measures that serve the same ends. For example, mandatory accreditation is seen as a way to compel teacher education programs to improve. Indeed, some policymakers who do not support NCATE accreditation have also proposed measures intended to force improvement. These include denying federal funds to programs when too many of their graduates fail teacher licensing exams or, in more extreme versions, shutting such programs down.

Such measures do not protect the public from poor hiring decisions by school districts. Districts are already prevented from hiring teachers who fail the licensing test. Rather, these penalties are directed at the institutions that train teachers, to goad them into raising their admissions or exit standards or improving their program content. But closing programs, for reasons we have described, reduces the supply of teachers and impairs recruitment. Before taking such drastic steps, policymakers ought simply to publicize scores on licensing examinations by institution. This would make the information available to school districts and to prospective teachers, who are likely to respond in ways that will pressure programs of teacher education to improve. To date, this kind of information has not been readily available. Indeed, states maintain administrative records from which it is possible to derive even more revealing information, such as the percentage of a program's graduates that are teaching in the state's public schools, the types of districts in which they are employed, how long they continue in teaching, and the salaries, on average, that they earn. At present the public knows none of this.

Information is concealed even from those who would appear to have a clear claim to it. In states that use licensing examinations developed by the Educational Testing Service (including the National Teachers Examination and the Praxis series), it is current policy to deny school districts access to teachers' scores. Instead, districts find out only whether an applicant passed the test (i.e., received a license). Districts may not learn the scores of those who passed for purposes of deciding whom to hire.

It is the Educational Testing Service that insists on this policy. The reason offered by the ETS is that these tests have been validated for licensing purposes only, not for such other purposes as employment. In these validation studies, panels of educators were asked what proportion of minimally qualified candidates would be able to answer a particular item correctly. Thus the tests are said to contain information only about minimal qualifications, not about qualifications of applicants above that level.

This is a specious argument. First, it has never been established that the educators asked this question are able to answer it—i.e., that they can compartmentalize professional knowledge, distinguishing the knowledge that makes a teacher minimally competent from that which contributes to performance at higher levels. Indeed, since there is no external standard, the process is entirely circular: minimal competence is whatever these experts say it is.

Second, scores on these examinations have been found to be highly correlated with scores on other tests of academic aptitude or achievement, such as college entrance examinations. Research has shown that scores on achievement and aptitude tests (particularly tests of verbal ability) are positively related to teacher effectiveness. The research has not shown that there are ceilings in this relationship—levels above which higher scores make no difference to performance. It would be surprising, then, if the NTE and the Praxis examinations did not contain information about teaching performance beyond the knowledge required to be minimally qualified.

In addition, states have set different passing scores. This puts ETS in the untenable position of claiming that, in one state, it is relevant to know whether an examinee was able to score at least 85 out of 100, but in another state (where the passing threshold is only 80), information in the 80 to 85 range is of no value to prospective employers. This is nonsense. School districts should have access to the scores of teacher applicants. If ETS is unwilling to validate its tests for this purpose, states should find test-preparers that will.[71]

In summary, policymakers who want to upgrade teacher education or who desire that school districts do a better job of screening job applicants have a variety of other instruments they can employ apart from licensing regulations. It is important that these tools of policy be used and that licensing be limited to the narrow function it best serves: to protect the public from the worst abuses of incompetent or corrupt administrators. With this in mind, we offer the following recommendations for licensure policy.

I. *Expand alternative certification.*

States that do not have alternate routes for entering teaching should establish them. Those that do should remove restrictions that limit the size and scope of these programs for reasons unrelated to teacher quality. For example, because alternative certification programs are often designed to facilitate mid-career changes, many will not accept individuals who recently graduated from college. This precludes the participation of a younger, more mobile part of the workforce. Given that age is not used to determine who may enter a traditional teacher education program, there is no reason to erect this artificial barrier to alternate route teachers.

Many other restrictions have been placed on alternate routes that prevent them from being used to their full potential. In some states, districts may hire alternatively certified teachers only after declaring that no regularly certified teacher could be found.[72] This makes sense only if *any* regularly licensed teacher is superior to *all* teachers who enter by alternate routes. This is patently false, as shown by hiring patterns in states that do not impose such restrictions. Elsewhere, there is a major focus on recruiting minority teachers for urban schools. This is a laudable goal; however, there is no reason to limit alternate routes to this function, rather than the more general objective of recruiting better teachers for all schools. Some states cap the number of teachers who may enter by alternate routes. In other cases, program size is constrained by easily identified bottlenecks—for example, a limited number of places in a required summer workshop. These restrictions should be lifted.

II. *Streamline entry into professional development schools.*

The Holmes Group and the National Commission have advocated internships in professional development schools for all new teachers. Unfortunately, they would delay this clinical experience until prospective teachers had completed one or two years of education courses. We recommend that applicants instead be selected for internships on the basis of undergraduate transcripts and examination results and that they begin to work at once. Essential courses can be taken concurrently with their clinical training. This would reduce the time teachers are required to spend in preservice courses and allow them to begin immediately the kind of training that they are likely to find most interesting and useful. States will be even more successful in attracting able teachers if trainees receive a stipend for the work they perform in the professional development school.

Teacher training that is structured in this manner will be similar to a model of on-the-job training that has been successfully used in more than one hundred independent private schools.[73] These schools hire new college graduates with no prior training in education to serve in internships at half-pay. Interns work for one year under the supervision and with the assistance of an experienced teacher. At the end of that year, they may be offered a regular position in the same school, should there be a vacancy, although the more usual outcome is for the intern to move on to another

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school on the strength of recommendations from the first. The internship model gives private schools an opportunity to hire bright new graduates who are eager for a real teaching opportunity (as we know from the response to Teach for America) while at the same time making sure they are not sent unaided into the classroom. Although compensation is very modest (50 percent of a starting salary that is already low by public school standards), it is clearly superior to the prospect of taking out student loans to finance two or three years in a post-baccalaureate teacher education program.

III. *Relax licensure requirements for teachers employed in charter schools.*

Teacher licensing involves a trade-off: protection from poor administrative decisions versus the good that results when competent administrators are given a freer hand. Licensing regulations should strike the right balance between these objectives. Regulations that are set correctly for the traditional public school will over-regulate a school where accountability has been enhanced by other means. This is clearly the case in charter schools. These schools must satisfy their customers and the authorities that review their charters. Both are mechanisms for accountability lacking in the traditional public school. Because they check abuses of administrators' prerogatives, charter schools should be granted greater freedom to employ teachers who seem right for the school, even if those instructors have not met all the standards required by the licensing agency.

Some states have pursued just this kind of policy by permitting charter schools to hire unlicensed teachers. In other states, a predetermined percentage of charter school teachers may be unlicensed.[74] Both policies are consistent with this principle. However, in some states the permitted share of unlicensed teachers is small (e.g., 20 percent). Should it become apparent that many schools reach this ceiling, these states should raise the limit.

IV. *Give schools meeting standards for student achievement the freedom to hire unlicensed instructors if they desire.*

Many states are now in the process of establishing standards for student achievement. Political and practical obstacles remain before these efforts result in a clear set of guidelines for public schools. However, when (and if) this process is complete, schools will know what is expected of them and the public will have ways of monitoring whether those goals have been achieved. When this occurs, schools that are achieving the goals set for them should have freedom to hire faculty as they see fit. There is no justification for constraining the decisions of administrators who are performing to the public's expectations. Rather, the record of superintendents and principals in such schools entitles them to the presumption that decisions to employ unlicensed teachers are made for good reasons.

This proposal will encounter opposition, not least from education schools eager to preserve their role in teacher training. If it should prove politically impossible to enact this reform, there would still be considerable benefit if schools meeting performance standards could employ teachers who are unlicensed when first hired, allowing them to earn their licenses over time, as many parochial schools do now. This policy would give schools access to applicants who want to try teaching before committing the time and money required to earn a license, while at the same time preserving the role of schools of education in the preparation of teachers.

V. *Complement subject-matter tests with policies to enhance local accountability and expand the applicant pool.*

For capable persons, testing raises fewer barriers to entry than does the requirement that all teachers complete lengthy programs of preservice training. It is also a more flexible and accurate way of assessing subject knowledge than requiring a specified number of course credits. For these reasons, we recommend that states move away from transcript-based licensing toward a testing-based system.

Higher salaries are more likely to produce an improvement in teacher quality if complementary reforms of the type under discussion—flexible licensing policies and enhanced accountability—are adopted as well.

Tests currently available are not comprehensive measures of teaching effectiveness. As a result, no matter where the passing score is set, errors will occur. Some who pass will not be effective teachers; some who might have taught well will fail. As the cutoff score is raised, the probability of the second kind of error increases. As the cutoff score is lowered, the probability of the first type of error increases. Choice of the cutoff must therefore take into account the frequency and seriousness of errors of both types.

However, the two errors are not symmetric, a fact with important policy implications. Ineffective teachers who pass the test will receive licenses, but this does not imply that any of them will ever teach. The mistake made by the licensing agency may be caught at a subsequent stage as these individuals seek jobs. The better local school administrators are at screening job applicants, the more likely this is, and the less harm is done by the initial error. On the other hand, if the licensing agency rejects someone who would have made an effective teacher, there is no later opportunity to correct this mistake (if schools must hire licensed teachers). Because of this asymmetry, we recommend that licensing agencies err in the direction of leniency, particularly as policies are put in place to enhance local accountability.

Improving hiring practices at the district level cushions the system against the consequences of setting the licensing standard too low. How can we protect against the possibility that the cutoff score will be set too high? The answer in this case is to expand the teacher applicant pool (a good idea in its own right, provided it is done cost-effectively). High cutoff scores are a problem for districts that must hire marginal applicants—teachers who scored just well enough to pass but are not very good in other respects. These districts would benefit from the chance to hire a candidate who scored a few points lower on the test but is stronger in other ways. The advantage of expanding the applicant pool is that fewer districts are put in a position where they must hire marginal candidates at all. When there are more applicants who are strong in all regards, licensing can serve its central function without substantial unwanted side effects. It protects the public from administrators who would make very poor hiring decisions without unduly constraining decisions in the remaining schools.

It may seem obvious that the way to expand the applicant pool is to raise teachers' salaries. However, raising pay alone is not likely to produce significant improvements in teacher quality.[75]

Capable college graduates with attractive options outside teaching need to be able to enter teaching without first completing a long preservice training program. The latter requirement poses a barrier to entry that works at cross-purposes to higher salaries. In addition, new incentives are needed to induce school districts to focus on recruiting teachers with strong academic backgrounds. Higher salaries are therefore more likely to produce an improvement in teacher quality if complementary reforms of the type under discussion—flexible licensing policies and enhanced accountability—are adopted as well.

It should be the object of policy to increase the accountability of local administrators for student achievement, thereby enhancing incentives to make personnel decisions—indeed, all decisions—in the public interest.

Conclusion

Recommendations that public school teachers meet stricter licensing standards are an understandable reaction to low levels of achievement in American public schools. However, policymaking in this area must be tempered by the recognition that the state has limited means to compel improvement in teacher quality through licensure regulations. Accreditation of teacher education programs by an organization of professional educators has not improved the quality of the workforce in any way that we can detect; moreover, there is much potential for harm if the power to withhold accreditation is used to promote untested and ill-conceived educational ideas. Licensing on the basis of teacher tests serves some useful purposes, but the assessment instruments available to date offer only an imperfect and incomplete measure of teaching performance.

We are persuaded that real progress will be made only if local school administrators—not licensing agencies or accrediting bodies—are made the focus of policy. The reasons can be summed up in two words: information and incentives. No one in public education is in a better position to decide which teacher is right for which school than local administrators. Principals and superintendents have access to better information about teacher candidates and school needs than distant licensing agencies. If they do not use this information as well as they might, the solution is not to hem them in by turning control over key aspects of teacher recruitment to external accrediting, licensing, or assessment agencies. Rather, it should be the object of policy to increase the accountability of local administrators for student achievement, thereby enhancing incentives to make personnel decisions—indeed, all decisions—in the public interest.

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[1] While some states nominally require private school teacher to hold licenses, our own analysis of Department of Education data on private schools suggest that such requirements are not vigorously enforced. See Dale Ballou and Michael Podgursky, "Teacher Recruitment and Retention in Public and Private Schools," *Journal of Policy Analysis and Management* (Summer 1998): 393-418. As a consequence, private schools hire large numbers of unlicensed teachers. Several states allow charter schools to hire unlicensed teachers as well.

[2] Robin Henke et al., *Schools and Staffing in the United States: A Statistical Profile, 1993-94* (Washington D.C.: U.S. Department of Education), 58. The figure of 92 percent includes teachers with advanced, regular, and probationary certificates. Probationary certificates are awarded to new teachers who are in the first stage of the regular certification process. Omitted are teachers with alternative, temporary, emergency, provisional, or no certificates. Subtotals in these last categories should be regarded with caution, since many teachers appear to be confused about whether they hold one type of non-standard certificate or another. (See Dale Ballou, "Alternative Certification: A Comment," *Educational Evaluation and Policy Analysis*, forthcoming.)

[3] Dale Ballou, "Do Public Schools Hire the Best Applicants," *Quarterly Journal of Economics*, (February 1996); Dale Ballou and Michael Podgursky, *Teacher Pay and Teacher Quality* (Kalamazoo: W.E. Upjohn Institute, 1997).

[4] National Commission on Teaching and America's Future, *What Matters Most: Teaching for America's Future* (Washington, D.C.: Author, 1996), 70.

[5] Ibid, 27.

[6] Carolyn M. Evertson, Willis D. Hawley and Marilyn Zlotnik, "Making a Difference in Educational Quality Through Teacher Education," *Journal of Teacher Education* 36 (May-June 1985): 2-12.

[7] Frank Murray, "Questions and Answers about TEAC," remarks before the Education Leaders Council in San Jose, California, 12 September 1998, 8.

[8] Jere Brophy, "Teacher Influences on Student Achievement," *American Psychologist* 4, no. 10: 1070-1071. Citations that appeared in the original have been deleted.

[9] Evertson, "Making a Difference Difference in Educational Quality Through Teacher Education," 7.

[10] Murray, "Questions and Answers about TEAC," 8-9.

[11] An extensive critique of constructivist-inspired pedagogy appears in E.D. Hirsch, Jr., *The Schools We Need and Why We Don't Have Them* (New York: Doubleday, 1996).

[12] The influence of ideology on pedagogy is evident in this recent defense of whole-language instruction and critique of the phonics-based alternative (Gerald Coles, "No End to the Reading Wars," *Education Week*, 2 December 1998, 38, 52):

> Accompanying the call for the direct instruction of skills is a managerial, minimally democratic, predetermined, do-as-you're-told-because-it-will-be-good-for-you form of instruction.... It is a scripted pedagogy for producing compliant, conformist, competitive students and adults.... [O]ne reason political conservatives love skills-first instruction: It makes no challenges to the distribution of wealth and power, and the resources available to schools, classrooms, children, and their families. Research on skills teaching with poor children takes poverty as a "given" and seeks a minimally expensive "bootstrap" solution to a better life in a presumed meritocracy.

[13] Ralph A. Raimi and Lawrence S. Braden, *State Mathematics Standards: An Appraisal of Math Standards in 46 States, the District of Columbia, and Japan*, Fordham Report, vol. 2, no. 3, March 1998, 11.

[14] Howard Gardner, *Frames of Mind: The Theory of Multiple Intelligences* (New York: Basic Books, 1983).

[15] See Perry Klein, "Multiplying the Problems of Intelligence by Eight: A Critique of Gardner's Theory," *Canadian Journal of Education* 22, no. 4: 377-394.

[16] Ibid, 387.

[17] National Council for Accreditation of Teacher Education, *Standards Procedures & Policies for the Accreditation of Professional Education Units* (Washington D.C.: Author, 1997).

[18] Ibid, 23.

[19] We eliminated a small number of records with out-of-state institutions or for which the institution code was missing. When a test-taker repeated the same test more than once, only the first test score is used in the analysis. The classification of institutions was based on a May, 1997, list of accredited programs obtained from NCATE.

[20] Ibid, 15.

[21] Ibid.

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[22] Ibid., 17.

[23] Data consisted of outcomes on the state's licensing test (1 if pass, 0 if fail) and scores on a set of examinations given to all students entering teacher education. The relationship estimated was a simple linear probability model for the sample of Missouri teachers on which we had complete data:

$$PASS = a + b\,PRETEST + c\,X + d\,NCATE + e$$

where PASS is the dummy variable indicating the outcome of the licensing test, PRETEST is a vector of examination scores required of all entrants into teacher training programs, X is a set of demographic controls (age, race, sex), and NCATE is a dummy variable taking the value one if the student was trained in an NCATE-accredited program. If NCATE is associated with higher value-added we would expect $d > 0$.

The estimates of this model are available from the authors. The individual and composite test scores for entering candidates were strong predictors of performance on the licensing exam. After controlling for these pre-test scores, however, we found an insignificant, negative coefficient on NCATE. Thus, we found no evidence that the value-added in NCATE-accredited programs is higher than in non-accredited institutions.

[24] Because NCATE accreditation procedures changed in 1987, the sample was restricted to individuals who graduated in 1990 or later and who began teaching no earlier than 1992.

[25] Years of teaching undergraduates have convinced us that most students complete calculus without understanding the fundamental concepts of limit, continuity, and differentiability. This is not very surprising. It is harder to understand these ideas than to memorize the rules, which is how most students get through the course. Thus, the NCTM's guidelines require mathematics teachers in grades 5 through 8 to understand concepts that most people who have *taken* calculus do not understand.

[26] In Kentucky, more than 40 percent of college mathematics majors were unable to pass the state's licensing examination in mathematics. Twenty percent of majors taking examinations in chemistry and biology failed (*Lexington Herald Leader*, 1 April 1998). In New Jersey, teachers entering by the state's alternate certification route have outscored traditionally certified teachers on the National Teacher Examination, even though fewer of them have majored in the subjects they teach. See Vicky S. Dill, Alternative Teacher Certification, in John P. Sikula, ed., *Handbook of Research on Teacher Education* (New York: Macmillan, 1996), 951. Teachers of mathematics who have majored in the subject often do not know how to explain algorithms used to solve problems and are unable to reason through problems. Their approach to mathematics is to memorize rules (G. Williamson McDiarmid and Suzanne M. Wilson, "An Exploration of the Subject Matter Knowledge of Alternate Route Teachers: Can We Assume They Know Their Subject?" *Journal of Teacher Education* 42, no. 2 (1991): 93-103).

[27] Lynn Olsen, "Group Says Reforms May Dissuade Some From Career in Teaching", *Education Week*, 18 March 1985. The views in question were expressed by faculty from teacher education programs in a consortium of sixteen of the nation's leading liberal arts colleges.

[28] Michael D. Andrews and Richard L. Schwab, "Has Reform in Teacher Education Influenced Teacher Performance? An Outcome Assessment of Graduates of an Eleven-University Consortium," *Action in Teacher Education* 14, no. 7 (1995): 43-54. The study included no controls for institutional characteristics (apart from program length) or for characteristics of teachers or the schools in which they were employed.

[29] Studies of student performance in Texas that controlled for student demographic characteristics and socioeconomic status found that students of alternate route teachers did as well or better that those of traditionally licensed teachers. See Stephen D. Goebel, Karl Romacher, and Kathryn S. Sanchez, *An Evaluation of HISD's Alternative Certification Program of the Academic Year: 1988-1989* (Houston: Houston Independent School District Department of Research and Evaluation, no date), ERIC Document No. 322103. In a study of mathematics achievement in North Carolina, students of licensed teachers outperformed students of unlicensed teachers (Parmalee P. Hawk, Charles R. Cable, and Melvin Swanson, "Certification: Does It Matter?" *Journal of Teacher Education* 36 [May-June 1985]: 13-15). But the number of teachers in the study was extremely small (18) and there were no controls for teachers' math knowledge (licensed teachers had more).

[30] New Jersey State Department of Education, *The New Jersey Provisional Teacher Program: A Sixth Year Report* (Trenton: Author, 1991), and unpublished statistical reports from the state DOE covering 1985-1996.

[31] The notion that education classes prepare teachers for such students is hard to take seriously, given the results of a 1997 survey of education school faculty. See "Public Agenda Foundation," *Different Drummers* (New York: Author, 1997). Education school professors attached much less importance to issues of classroom management like the maintenance of discipline than did practicing classroom teachers, and were far less likely to believe it was the role of the school to teach values that contribute to an orderly classroom environment.

[32] Martin Haberman, "Preparing Teachers for the Real World of Urban Schools," *Educational Forum* 58 (Winter 1994): 162-168. The point is not that urban schools face a shortage of conventionally trained applicants (though this is sometimes true). Rather, those they hire are simply not effective.

[33] Kane, Parsons and Associates, *A Survey of Principals, Parents, and Students in School Districts with Teach for America Corps Members* (New York: Author, 1997).

[34] Dill, 1996, is an exhaustive survey of this literature.

[35] C. Emily Feistritzer and David T. Chester, *Alternative Teacher Certification: A State-by-State Analysis 1998–99* (Washington, D.C.: National Center for Education Information, 1998).

[36] Gerald J. Adams and Micah Dial, "Teacher Survival: A Cox Regression Model," *Education and Urban Society* 26, no. 1 (1993): 90-99; Dill, 1996, 950-954.

[37] C. Emily Feistritzer, *Who Wants To Teach?* (Washington D.C.: National Center for Education Information, 1992).

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[38] The statewide standard deviation on the elementary school certification test was 63.1. Of the nineteen programs that produced at least 100 test-takers during the sample period, fourteen showed standard deviations of 50 or more. In three programs the dispersion exceeded that for the state as a whole.

[39] Alan R. Tom, "External Influences on Teacher Education Programs: National Accreditation and State Certification," in Ken Zeichner, Susan Melnick, and Mary Louise Gomez, eds., *Currents of Reform in Preservice Teacher Education* (New York: Teachers College Press, 1996). Our own conversations with the deans of education schools confirm that the amount of paperwork required by NCATE is sufficiently burdensome to dissuade some schools from seeking accreditation.

[40] Ibid., 17-18.

[41] Ballou and Podgursky, "Reforming Teacher Training and Recruitment: A Critical Appraisal of the Recommendations of the National Commission on Teaching and America's Future," *Government Union Review* 17, no. 4 (1997). Besides the unions, the other dominant organization in NCATE's governance structure is the American Association of Colleges of Teacher Education, which represents approximately 700 of the 1300 institutions that train teachers. These colleges might also have an interest in seeing programs closed in rival institutions.

[42] Tom, 14.

[43] *Teacher Magazine*, January 1994.

[44] Editorial, "How Not to Write English," *New York Times*, 14 March 1996.

[45] Evertson, Hawley, and Zlotnik, 7.

[46] Feistritzer, 1992. Specifically, 34 percent gave as their reason that they did not want to go back to college to take requisite courses to meet requirements for teaching credentials. To this should be added the 27 percent who said they could not find/get into an alternative teacher certification program. Since survey participants could give more than one answer, the total must be reduced by the percentage of overlapping responses (not reported). Licensing requirements were probably also responsible for deterring some of the additional 12 percent who said that it was too much trouble to find out what was required to become a teacher, as well as the 15 percent who cited too much red tape, though these responses may also show that initial interest was not very strong.

[47] Personal communication from Rebecca Berreras of Teach for America, 28 January 1998. The small size of Teach for America has led some to wonder whether it holds any lessons for public education. However, the program has been kept small as a matter of policy. Between 1990 and 1997, five times as many persons applied to Teach for America as were accepted for training and placed in schools. In addition, because the program provides teachers for school districts that have trouble attracting applicants, there are almost certainly many other liberal arts graduates with an interest in teaching who have not applied to Teach for America because they are reluctant to take jobs in poverty-stricken rural and urban systems.

[48] These data should not be taken to imply that half of all Teach for America volunteers make their careers as teachers. There is almost certainly some sampling bias in these responses: alumni who have remained active in education are probably more likely to respond to mail from Teach for America than those who have lost interest in teaching and gone on to other careers. Nonetheless, it is clearly a mistake to assume that volunteers' involvement in teaching is invariably of short duration.

[49] Richard Murnane et al., *Who Will Teach? Policies that Matter* (Cambridge: Harvard University Press, 1991).

[50] Olson, 1987.

[51] Carnegie Forum for Education and the Economy, *A Nation Prepared: Teachers for the 21st Century* (New York: Carnegie Corporation, 1986), 25.

[52] Walter Haney, George Madaus and Amelia Kreitzer, "Charms Talismanic: Testing Teachers for the Improvement of American Education" *Review of Research in Education* 14 (1987): 217.

[53] Educational Testing Service, *The Praxis Series* (Princeton N.J.: Author, 1995).

[54] National Board for Professional Teaching Standards, *National Board Certification Portfolio Sampler, 1996-1997* (U.S.A.: Author), unpaginated.

[55] James Barton and Angelo Collins, "Portfolios in Teacher Education," *Journal of Teacher Education* 44 (May-June 1993): 201.

[56] The National Board for Professional Teaching Standards, which has promulgated standards for the purpose of conducting performance-based assessments, has undertaken no studies of predictive validity.

[57] See Paul Hill, "Contracting in Public Education," in Ravitch and Viteritti, eds., *New Schools for a New Century* (New Haven: Yale University Press, 1997).

[58] *New York Times*, 19 September 1997, A19.

[59] RPP International and the University of Minnesota, *A Study of Charter Schools* (Washington D.C.: U.S. Department of Education, Office of Educational Research and Improvement, 1997); Center for Education Reform, *Charter School Highlights and Statistics*, (www.edreform.com/pubs/chglance.htm, 1998).

[60] Teachers who are dismissed have a year to find employment elsewhere in the system. If they fail to do so (and no school is obliged to take them), they are terminated outright. *Chicago Tribune*, 15 May 1998, 15.

[61] *Chicago Sun-Times*, Tuesday, 19 May 1998.

[62] Tennessee has demonstrated the feasibility of an approach that uses gains in student test scores to identify high-performing teachers. William L. Sanders and Sandra P. Horn, "The Tennessee Value-Added Assessment System (TVAAS): Mixed-Model Methodology in Educational Assessment," *Journal of Personnel Evaluation in Education* 8 (1994): 299-311.

[63] *New York Times*, 24 September 1995.

[64] Neil Theobald, "An Examination of the Influence of Personal, Professional, and School District Characteristics on Public School Teacher Retention," *Economics of Education Review* 9, no. 3 (1987).

[65] Edwin M. Bridges, *The Incompetent Teacher: The Challenge and the Response* (Philadelphia: Falmer Press, 1992).

[66] Virtually all of the school heads we interviewed for our book, *Teacher Pay and Teacher Quality*, indicated that they had dismissed an ineffective teacher on at least one occasion.

[67] Susan P. Choy et al., *Schools and Staffing in the United States: A Statistical Profile, 1987-88* (Washington D. C.: U.S. Department of Education, National Center for Education Statistics, 1992), 133.

[68] See, for example, Arthur E. Wise, "Choosing Between Professionalism and Amateurism," *Educational Forum* 58 (Winter 1994): 140.

[69] If teacher salaries are so low that districts have no choice but to hire graduates of inferior programs, then the market will not produce the kind of teachers districts desire, but rather the kind they can afford. This is clearly a problem, but just as clearly, licensing is not the solution. Rather, teacher pay should be raised. To adopt stricter licensing standards at a time when salaries are too low to induce enough capable people to teach would only make matters worse.

[70] Louis Harris and Associates, Inc., *The Metropolitan Life Survey of the American Teacher, 1985* (New York: Metropolitan Life Insurance Company, 1985).

[71] The ETS has refused to take steps that would provide more solid evidence of validity, for example, correlating teachers' scores with achievement test scores of their students. According to one ETS official whom we questioned on this point, the opposition of teacher unions was a prominent reason for this decision.

[72] Feistritzer, 1997.

[73] National Association of Independent Schools, *1997-1998 Intern and Teaching Fellow Programs in Independent Schools*, 1998.

[74] In Missouri up to 20 percent of a charter school's faculty may be hired without licenses. North Carolina allows 25 percent of elementary and 50 percent of secondary teachers to be unlicensed (Center for Education Reform, 1998).

[75] A full discussion appears in Ballou and Podgursky, 1997.

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Teacher Licensing and Student Achievement

Dan D. Goldhaber and Dominic J. Brewer

States use licensing to ensure that only qualified teachers can be hired, but loopholes often allow teachers to enter the classroom via alternate routes. Comparing the performance of students whose teachers hold standard certificates with students whose teachers have non-standard credentials is one way to gauge the efficacy of licensing. Using data from the National Educational Longitudinal Study of 1988, this study finds that students whose teachers possess a B.A. or M.A. in math outperform other students in math. Students whose teachers have any kind of certification (standard, emergency, alternative, etc.) outperform students whose teachers have no certification or are certified in a different subject. The authors also report that math and science students whose teachers have emergency credentials do no worse than those whose teachers hold standard teaching credentials.

Introduction

How can we ensure that the nation's classrooms are staffed by high quality, well-trained, teachers? Answering this question is central to improving educational outcomes, particularly given the large numbers of new teachers that will be needed over the next decade due to increases in enrollment and unprecedented teacher retirements.[1] According to the National Commission for Teaching and America's Future, "More new teachers will be hired in the next decade than in any previous decade in our history."[2] These demographics provide policymakers with the opportunity to greatly influence the complexion of the nations's teaching workforce for a generation.

An elaborate system of training and licensure is geared toward the preparation of those entering teaching.[3] However, this system has developed piecemeal over many years, and most teachers completing a state-approved program in a school of education receive a license to teach. Although efforts to develop professional certification have made some headway (e.g., through the National Board for Professional Teaching Standards), the basic state licensure system remains in place. But what is

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the guarantee that the requirements for entering teaching are linked to student performance?

Surprisingly, very little research evidence exists on the effectiveness of the teacher licensure system, in terms of how well teachers subsequently teach and what works to promote positive student outcomes. Much of the educational establishment takes for granted that licensure is an important and effective screening system to create high quality teachers. For example, the recent National Commission on Teaching and America's Future (NCTAF) report, *What Matters Most*, offers a general indictment of the teaching profession. It claims that many newly hired teachers are unqualified for the job. The Commission's main concern is with teachers who have temporary, provisional, emergency licenses, or no license at all—presupposing, of course, that conventional licensure represents something we should care about.[4]

There is remarkably little rigorous research on several critical issues:

> Do teachers with regular licenses perform better than those with a probationary or emergency license?
>
> Are some components of teacher licensure more effective than others?
>
> What effect does licensure have on the quality of individuals entering teaching?

Do teachers with regular licenses perform better than those with a probationary or emergency license?

In this paper we focus on the first two of these questions.[5] We empirically test how students of teachers with regular certification perform relative to teachers who have probationary certification, emergency certification, private school certification, or no certification in subject, holding constant students' background and school characteristics. We also determine whether specific state-by-state differences in teacher licensure requirements systematically affect student achievement. We begin by reviewing previous work in this area.

Background and Policy Significance

The development of the modern public school system has been accompanied by the establishment of a relatively uniform path by which teachers obtain the credentials necessary to teach in the system. In the nineteenth century, teacher education shifted from "normal" schools (which often served as a substitute for high schools for those who wished to go into teaching) and less formal apprenticeship programs to college and university baccalaureate degree programs that had to meet a series of state standards for accreditation. More recently (since about 1970), there has been a shift away from undergraduate training toward post-baccalaureate programs (a professional, education specialist, master's, or doctorate degree).[6] Today, prospective teachers must clear a series of hurdles to obtain and maintain a teaching certificate. However, licensing in the United States is a state responsibility; thus, there is considerable variation in the hurdles associated with state licensure and certification policies.

Even when states do require exams, these tests often do not represent a significant hurdle to becoming a teacher.

Several high profile commission reports, such as the Holmes Group (*Tomorrow's Teachers*) and the Carnegie Forum on Education and the Economy Task Force on Teaching as a Profession (*A Nation Prepared: Teachers for the 21st Century*), have discussed ways of upgrading U.S. teachers.[7] Most prominent among them is the 1996 NCTAF report, *What Matters Most: Teaching for America's Future*. It emphasizes the importance of teacher knowledge of both content and pedagogy and, in particular, stresses that all teachers should graduate from an accredited school of education.[8] Despite these reports, it is not entirely clear how much is really known about the components of an effective licensure program. In fact, a review of the research literature on this issue, by Lilly, concluded that there was little reliable evidence on the impact of this system.[9]

The means by which states influence the quality of teachers is complex, given that there are several mechanisms through which policies may affect the number and type of people who end up teaching in a state's classrooms. Some states require prospective teachers to pass standardized tests or have a minimum grade point average prior to entering a teacher-training program. As of 1997, twenty-seven states and the District of Columbia had set minimum scores that prospective teachers had to achieve on Praxis I, the initial screening test sometimes required for application to a school of education. (This is a general test of ability used to assess an individual's aptitude for teaching.)

States may also impose standards for the accreditation of colleges of education. These standards can have an impact on the type and rigor of courses offered. Most states require prospective teachers to take general course work in English, humanities, social sciences, and mathematics. But states vary as to whether they require teachers to have specific courses dealing with pedagogy or subject matter. For instance, the number of required units in pedagogy varies from 6 semester units in Texas to 36 in some states.[10] Some states require a major in education, while others prohibit an education degree from fulfilling the requirements for an initial teaching license.[11]

States also vary in terms of whether they require graduates of education programs to pass tests of basic skills, basic knowledge, content knowledge, or pedagogy.[12] However, even when states do require exams, these tests often do not represent a significant hurdle to becoming a teacher. For instance, an examination of passing rates in Pennsylvania on the (previously used) National Teacher Exam, showed that more than 90 percent of candidates passed on the first try. Further, it was possible to miss half of the questions and still receive a license.[13] A more rigorous test recently administered to prospective teachers in Massachusetts showed that many could not meet this standard. Roughly half of those who were tested failed.[14]

Not all teachers obtain standard certification. Some obtain "emergency" licenses that permit teaching without having obtained the standard training and are used by districts to fill urgent or short-term vacancies. Increasingly, states have also developed various "alternative" certification routes, the best-known of which is Teach for America. In just six years, from 1986 to 1992, the number of states allowing alternative certification jumped from eighteen to forty.[15] These alternative routes vary widely, but in general they allow individuals who wish to teach, such as former Peace Corps volunteers, liberal arts college graduates, and military retirees, to begin in the classroom without having first completed a formal teacher education program.[16] This move has been controversial with some in the education establishment; the main concern seems to be that individuals entering through this route are of poorer quality and lack the training necessary to teach competently.[17]

Others believe that alternative routes attract "large numbers of highly qualified, talented and enthusiastic individuals" into teaching.[18]

To our knowledge, there have been no studies at the individual student level that explicitly examine the relationship between teacher licensure and student outcomes.

One argument for increasing the number of paths by which people can enter teaching is that there are shortages of teachers in mathematics and science. Shen finds that those with alternative certification are more likely than other teachers to hold bachelor's degrees in mathematics and science. Thus, these alternative routes do seem to be supplying individuals who can meet this need. The few studies of alternative certification find that students of alternate route teachers do at least as well as pupils of traditionally licensed teachers.[19] However, there is little rigorous evidence on the relative effectiveness of teachers with alternative certification versus standard certification.

In fact, claims of the value of conventional teacher licensure are difficult to square with anecdotal evidence from teachers and others.[20] And, despite hundreds of studies by economists, sociologists and others, on the impact that teachers have on students, it is not clear that state officials have the information necessary to formulate effective policies. Few of the studies show specific teacher characteristics—such as years of experience or degree level—to be statistically significant determinants of student achievement.[21] However, these studies have typically only used school district averages of these characteristics, and thus might miss important differences among schools within a district or teachers within a school. Some studies have included indicators of whether teachers are "certified" but only a few studies have explicitly analyzed the link between licensure and student performance.

A study by Strauss and Sawyer, using statewide data from North Carolina, finds that average school district performance on standardized exams increases with the average performance of school teachers in the district on the National Teacher Exam.[22] Similarly, Ferguson finds that, in Texas, where teachers are required to pass a certification exam, school districts with higher average teacher performance on the exam have higher student performance in mathematics.[23] These findings are important because they suggest that state licensure policies can affect student outcomes. However, there is no guarantee that they do. As noted above, most of the states that require teachers to pass competency exams have set relatively modest hurdles. Thus, it may be that state policies do not have a significant effect on the quality of teachers in the classroom because they are actually doing little to screen out poor candidates. Additionally, many states have only recently overhauled their certification policies, and most exempt existing teachers from the new requirements. Given the long tenure of teachers, it would take many years for changes in state certification policies, if they do not apply to existing teachers, to have a significant impact on students.

To our knowledge, there have been no large scale studies at the individual student level that explicitly examine the relationship between teacher licensure and student outcomes. In this paper, we focus on this issue by critically analyzing the effects of certification. In particular, we determine whether (1) the type of certification a teacher holds, or (2) specific state certification requirements are systematically related to student performance on standardized test scores in mathematics and science.

Methodology and Data

The following are the key questions of our study:

> Do teachers with "standard" certification outperform teachers with alternative or probationary credentials in terms of the achievement of students?
>
> Are different components of a state's system of licensure systematically related to student achievement?

To answer these questions, we employ a statistical technique (multiple regression) that allows us to assess the contribution of various factors (e.g., family income, teacher experience, class size) to explaining students' scores on twelfth-grade standardized mathematics and science tests. We can use the results from this analysis to determine how scores would be expected to change with a change in any of these factors. For instance, we can predict whether and by how much test scores would rise (or fall) if class size is lowered. We believe students' test scores can be explained by individual and family background characteristics; school, teacher, and classroom characteristics; and the state's teacher certification policies.

We use data derived from the *National Educational Longitudinal Study of 1988* (NELS), a nationally representative survey of about 24,000 eighth-grade students conducted in the spring of 1988. A subset of these students were resurveyed in tenth (1990) and twelfth grades (1992). Students provided comprehensive information on themselves and their families (their race/ethnicity, sex, family structure), and the survey was supplemented by a parental survey in 1988 (providing information on, for example, family income). At the time of each survey, students also took one or more subject-based tests in mathematics, science, English/writing, and history. The unique feature of NELS is that it is structured so that detailed teacher and class level information can be tied directly to individual students by subject. In other words, the characteristics of a twelfth-grade mathematics or science teacher (sex, race/ethnicity, degree level, experience, certification, etc.) who taught students taking the tenth- and twelfth-grade mathematics or science tests are known.

We use various measures of teacher training. We include in all our models whether the teacher has an M.A. or a Ph.D. degree, a professional degree (e.g., an M.D. or D.D.S.) or an education specialist degree (the omitted group is teachers with a B.A. or less). We also employ indicators of whether the teacher's bachelor's or higher degree is in the subject they are teaching or in education (the omitted group is non-subject, non-education). On the NELS twelfth-grade teacher survey, teachers were asked, "Which type of math and science teaching certifications do you hold from the state where you teach?" The response categories were "regular or standard," "probationary" (which is the initial certification issued after satisfying all requirements except the completion of a probationary period), "emergency" (which indicates that the teacher requires additional course work before regular certification can be obtained), "private school certification,"and "not certified" in subject. We group the teachers into five categories: those who hold a standard certification in subject, those who hold a probationary certification in subject, those who hold an emergency certification in subject, those who hold a private school certification, and those who are not certified in their subject area. Since the only difference between standard certification and probationary certification is whether or not a teacher has passed the probationary teaching period, we would expect the impact of these teachers on students to be similar.

We are unable to be certain of the extent to which definitions of certification vary from state to state or how individual teachers interpret this question. Further, none of these definitions strictly corresponds to the types of alternative certification discussed above, though we speculate that some teachers with emergency credentials may be pursuing, or have come through, alternative certification programs.

We undertake two types of analyses related to licensure. First, we investigate whether the type of certification a teacher has is related to her students' test-score gains, holding constant their family background and other schooling characteristics. The relative importance of certification compared with other teacher characteristics such as degree level and experience is then ascertained. We would expect that, if there is any value added by standard certification in terms of screening high quality individuals or providing useful training, students with teachers who have no certification or who have emergency certification would do worse on standardized tests. This is certainly the argument made by many proponents of the existing system of licensure.

Our focus here is on licensure in public schools, so our sample of students is restricted to those *students who were in public schools in the twelfth-grade*. It consists of 3,611 students in mathematics, and 2,299 students in science.[24] Descriptive statistics for our NELS mathematics and science samples are shown in Tables 1 and 2. Table 1 shows the mean characteristics of the *students* associated with teachers who have standard subject certification, emergency subject certification, probationary subject certification, and no certification in the subject they teach. We do not show means for teachers with private certification. The first column of the table shows the mean values for students who have teachers with standard certification in their subject, the second column is the means for students with teachers who hold probationary certification in their subject, the third for students with teachers who hold emergency certification in their subject, and the fourth for students with teachers who hold no certification in their subject. For instance, the mean value of family income for math students who have teachers with emergency certification, $37,451, is found by looking at the family income row and emergency certification column (which is column 3).

Uncertified math teachers have students with lower test scores, lower levels of parental education and family income, and parents who are far more likely to be absent from the household.

Table 1 shows some striking differences in the types of students taught by teachers with different types of certification.[25] For example, uncertified math teachers have students with lower test scores, lower levels of parental education and family income, and parents who are far more likely to be absent from the household. Some of these differences are large—for example, there is almost a full standard deviation of difference in twelfth-grade test scores between students whose teachers have a standard certification in their subject and those whose teachers are not certified in their subject. Also, students of teachers who hold a standard certification have an average family income that is at least $10,000 higher than the average income for students with teachers in the other categories. The overall pattern also holds for math when comparing emergency and probationary teachers' students to those with standard certification.

The patterns are less pronounced in the science sample, although a comparison between emergency/probationary certified teachers and standard certified teachers still shows that students with lower socioeconomic backgrounds tend to get teachers with non-standard credentials. These results provide *prima facie* evidence that students are not randomly distributed across teachers by type of certification. It is also interesting to note that the gain in the math test score from the tenth to twelfth grade is roughly 5 points for students whose teachers hold standard, probationary, and emergency certification, but is only about 2.6 points for students whose teachers are not certified in the subject. A similar pattern holds for science.

Table 2 shows mean school, class, and teacher characteristics associated with individual *teachers*. The first column of the table shows the mean values for teachers with

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Table 1. Means of Selected Student Variables by Type of Certification of 12th Grade Teachers

	(1) Standard Certification in Subject	(2) Probationary Certification in Subject	(3) Emergency Certification in Subject	(4) No Certification in Subject
Math				
Student tenth-grade test score	46.95	38.01	36.56	37.69
Student twelfth-grade test score	52.10	42.99	41.91	40.35
Student is white	.71	.72	.72	.53
Mother's education	13.27	12.50	12.13	11.79
Father's education	13.72	12.18	11.04	12.74
Father not in household	.21	.20	.32	.33
Family income	47,160	35,826	37,451	32,614
Number of students	3,126	25	47	60
Science				
Student tenth-grade test score	23.75	22.91	21.03	24.36
Student twelfth-grade test score	25.71	24.54	23.65	25.60
Student is white	.75	.78	.52	.74
Mother's education	13.48	13.08	12.55	13.64
Father's education	14.04	12.87	13.36	13.77
Father not in household	.21	.13	.22	.13
Family income	50,570	45,565	49,494	47,875
Number of students	1,966	32	42	31

standard certification in their subject, the second column is the means for teachers who hold probationary certification in their subject, the third for teachers who hold emergency certification in their subject, and the fourth for teachers who hold no certification in their subject. For instance, the mean experience level for science teachers who hold a probationary certification in their subject, 3.75 years, is found by looking at the teacher experience row and the probationary certification column (which is column 3).

Our samples consist of 2,101 math teachers and 1,380 science teachers.[26] The vast majority have standard certification (84 percent in both mathematics and science). Relatively small numbers of students are taught by teachers with anything other than standard certification. This table illustrates that there are important differences in teachers with different certification status. Teachers with standard certification in mathematics are more likely to be white and more likely to teach in schools with a high percentage of white students and a lower percentage of low income students.

Table 2. Means of Selected School and Teacher Variables by Type of Certification of 12th Grade Teachers

	(1) Standard Certification in Subject	(2) Probationary Certification in Subject	(3) Emergency Certification in Subject	(4) No Certification in Subject
Math				
Twelfth graders white (%)	71.32	52.27	67.39	62.45
Students free lunch (%)	21.48	29.50	28.14	26.27
Minority students in class (%)	26.11	45.95	31.65	41.65
Teacher white	.91	.68	.86	.76
Teacher years experience at secondary	17.98	2.60	6.53	12.80
Teacher has M.A.	.58	.20	.19	.51
Teacher has ed. specialist degree	.13	.05	.06	.04
B.A. major in math	.75	.74	.56	.14
M.A. major in math	.44	0	.50	.13
Number of teachers	1,766	22	37	49
Science				
Twelfth graders white (%)	73.60	76.86	68.00	75.44
Students free lunch (%)	20.67	21.38	29.91	23.20
Minority students in class (%)	24.29	27.10	29.70	27.99
Teacher white	.93	.90	.91	.91
Teacher years experience at secondary	17.35	3.75	7.22	13.70
Teacher has M.A.	.57	.25	.33	.48
Teacher has ed. specialist degree	.15	0	0	.09
B.A. major in science	.69	.81	.43	.20
M.A. major in science	.29	.10	.09	.08
Number of teachers	1,164	21	23	25

Their classes also have fewer minority students. In science, again, the results are similar but less pronounced.

Teachers with standard certification are, on average, highly experienced (almost 18 years of experience in mathematics). Not surprisingly, teachers with other types of certification, who are newer to the profession, have less experience—teachers with probationary certification in mathematics and science have around three years of experience at the secondary level, and teachers with emergency certification have approximately seven years of experience. Similarly, they are less likely to have master's and education specialist degrees. There is a mixed pattern on advanced degrees. For instance, we see that over half of teachers who have a standard certifi-

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cation in subject (column 1) have an M.A. degree, but less than a third of teachers with probationary (column 2) or emergency (column 3) credentials hold an M.A.

Since NELS also identifies where the teacher is teaching, we can link — by state — extant information on different features of each state's licensure system with the NELS teacher and student data. We derive information on state licensure policies from a variety of sources including: a 1990 ERIC report on state testing of teachers by Childs and Rudner, the Educational Testing Service, and a report prepared for the Pennsylvania State Board of Education.[27] These data contain information on certification requirements compiled for a variety of years beginning in 1982.

Key state licensure features that are identified, at various points in time, include:

> Whether a state requires prospective teachers to take a test prior to entering a school of education;
>
> Whether a state requires new teacher graduates to take a test prior to licensing;
>
> The minimum cutoff scores in three tests (mathematics, reading, writing) on the National Teacher Exam and Pre Professional Skills Tests that teachers must achieve prior to obtaining a license;
>
> The percentage of teachers in each state (that has an exam) who pass the state licensure exams (both admission and certification exams);
>
> Whether states require field experience prior to student teaching;
>
> The number of weeks of full-time student teaching required prior to licensure.

Table 3 shows selected state certification information. More than half the states had exams for prospective teachers to take prior to entering a school of education, and about two-thirds had an exit exam for teachers who had completed an education program. Based on the pass rates, these exams do not appear to represent significant hurdles to becoming a teacher: although in some states the pass rate are in the 60 to 70 percent range, the average pass rate across states is closer to 80 percent. Still, we cannot determine whether these tests may affect who tries to become a teacher. For instance, there may be a "screening out" effect of applicants if individuals who might otherwise try to become a teacher decide not to try due to anxiety about passing these exams.[28]

One significant issue with the NELS data is that we cannot identify the year a teacher obtained his or her certification, nor do we know the state from which the original certification was obtained. This means we cannot be certain that state licensure requirements are properly matched with teachers in the survey. This is a problem because there were significant changes in state policies on testing teachers in the 1980s. For instance, in 1980 only ten states required teacher testing for elementary and secondary schools. By 1990, however, that number had jumped to forty-six

Table 3. State Certification Requirements as of 1990 (range in parentheses)

Number of states with admissions tests	27
Average pass rate entrance exam (10 states)	78.40 (64 to 95)
Number of states with an exit exam	36
Average pass rate exit exam (18 states)	84.94 (69 to 97)
Number of states with exit exam on proficiency in basic skills	26
Number of states with exit exam on proficiency in professional skills	25
Number of states with exit exam on proficiency in subject knowledge	24

	General Knowledge	**Communication Skills**	**Professional Knowledge**
Number of states with cutoff scores on the National Teacher Exam	15	15	17
Average cutoff score on the National Teacher Exam	645.20 (639 to 650)	649.20 (644 to 657)	644.18 (630 to 648)

Note: The data in this table are from a 1990 Eric Report.

states. Some of our data on state licensing (e.g., testing requirements, pass rates, certification cutoff scores) are from the late 1980s, and so a fraction of teachers in our sample who had relatively little experience may have been subject to requirements in place at that time. Many, however, would have obtained licenses prior to this date. Unfortunately, a comprehensive database tracking changes over time in state teacher licensing requirements is not available, so we cannot be sure whether the same requirements were in place when each teacher obtained his or her license. It is possible, for example, that states with "strong" requirements at one time maintained strong requirements in other periods. On the other hand, one could argue that states with poor educational results due to low requirements were most apt to change those requirements. One way we attempt to address this issue is by estimating a variety of models where we focus on relatively junior teachers who likely obtained their certification during a period corresponding to our state certification data.

Results

The results from our statistical models (reported in Appendix Table A-1) indicate the contribution to students' twelfth-grade achievement of specific individual and family background variables, school variables, teacher variables, and class variables.[29] We find, consistent with many other studies, that family background characteristics have the largest impact on students' twelfth-grade mathematics and science test scores. For example, students whose parents have more education and higher incomes also have higher test scores. By contrast, many of the school, teacher, and class variables have effects that seem contrary to expectations. For instance, in both mathematics and science, students with teachers who have a professional degree or a Ph.D. are not found to have higher test scores than students with teachers who do not hold these credentials.[30]

Consistent with our prior findings pertaining to tenth-grade student achievement, *math students having teachers with bachelor's or master's degrees in mathematics outperform students whose teachers do not hold these credentials.*[31] For example, the impact on students' mathematics scores of having a mathematics teacher who holds both a B.A. and an M.A. in mathematics is about one point on the twelfth-grade mathematics test. This represents roughly 8 percent of the standard deviation on the test, or *more than a third of a year of schooling.*[32] By contrast, we find having a degree in education has no impact on student science test scores and, in mathematics, having a B.A. in education actually has a statistically significant *negative* impact on scores in math. This latter result may seem counterintuitive, but it is not surprising when one considers the fact that most college students selecting education majors tend to be drawn from the lower part of the ability distribution.[33] Given this, "major in education" may serve as a proxy for teacher ability, which has been shown to have an important impact on student achievement.

Teachers who have emergency certification in mathematics seem to have roughly the same impact on students as teachers who hold standard certification.

Turning to an examination of the effect of certification, we find that the type of certification a teacher holds is an important determinant of student outcomes (see columns [1] and [3] of Appendix Table A-1). In mathematics, we find teachers who have a standard certification have a statistically significant positive impact on student test scores relative to teachers who either are not certified or are certified out of subject (in these data we cannot distinguish between no certification and certification out of subject area).[34] Roughly speaking, having a teacher with a certification in mathematics results in a two point increase in the mathematics test which represents *more than three-quarters of a year of schooling* (or about 16 percent of the standard deviation on the twelfth-grade test). This is about twice the impact of having a teacher with both a B.A. and an M.A. in mathematics. Teachers with probationary certification have a similar positive impact. In practice, there are a lot of teachers who have both degrees in subject and certification in subject. Thus, what we are comparing here is a teacher who holds B.A. and M.A. degrees in math but no certification with another teacher who holds a certification in math but no degrees in math.

One of the most interesting findings is that *teachers who have emergency certification in mathematics also seem to have roughly the same impact on students as teachers who hold standard certification.* In fact, statistical tests indicate that there is no significant difference between the categories. Though the effects are not as strong in magnitude or statistical significance, the pattern in science is similar. Teachers with standard and probationary certification have a positive (though not statistically significant) impact on students' science test scores. Emergency certification in science was found to have a statistically significant positive impact, and statistical tests again reveal no statistically significant difference in performance between those with emergency and standard certification. The findings with regard to emergency certification are striking because they strongly contrast with the conventional wisdom (put forth by the NCTAF and others) that good teachers only come though conventional routes.

Overall, we do not find a strong relationship between state certification policies and student outcomes.

It is likely that the group of teachers with emergency certification is quite heterogeneous. As is apparent from the means (in Tables 2), individuals with these credentials have far less teaching experience and are more likely to be teaching in high poverty schools. It is likely that some urban school systems with poor working conditions find it difficult to hire enough teachers with standard certification, so are forced to hire teachers who have not completed formal training. Our results suggest that, holding all else constant, there is no evidence that teachers with standard certification outperform those with emergency credentials. Though it is speculative, one explanation for this finding is that teachers with non-standard certification have been more carefully screened by school districts for ability or content knowledge than those with standard certification.

Since licensing is a state function, and requirements vary across states, one might expect the effects of licensing on student test scores to be different for some states relative to others. In fact, we find little evidence of this. Some of our model estimates statistically account for this possibility by assessing the degree to which teacher effectiveness differs by state.[35] In these models we continue to see a similar pattern of teacher effectiveness by certification status. For instance, we still see that teachers with emergency and probationary certification perform as well as those with standard certification.

Closer analyses of state effects suggest only modest evidence that they even exist. State licensure policies do not appear to have much direct impact on student outcomes. For instance, measures of how difficult it is to become a teacher in a particular state (such as the Praxis or NTE pass rates, whether a state requires teachers to have field experience prior to student teaching or the number of full-time weeks of student teaching required prior to licensure) are not systematically related to student achievement.[36] Several model specifications (in columns (2) and (4) of Appendix Table A-1) do, however, allow for the possibility that there is a relationship between a state's having an admissions test requirement for licensure and the effect of teacher certification in that state.

One might think that tougher certification requirements translates into higher quality teachers, which implies that states with such requirements should have teachers whose students perform better.[37] In fact there is little evidence of this. The basic findings that students of teachers with emergency certification perform about as well as those of teachers with no certification holds up in these model specifications; however, there is relatively little difference in performance of teachers with standard licensure in states that require certification tests and those that do not. In sum, *we find little evidence linking state licensure policies in the 1980s to student achievement.*

These results should be interpreted cautiously because our state admissions and certification test data are from a time when they may not have applied to many of the teachers in our sample. We therefore re-estimated our statistical models using samples of students who had teachers with less than four years of experience (the estimated coefficients from these models are shown in appendix Table A-2). This means that many (though not necessarily all) were subject to these state requirements. The results for mathematics are little changed from the previous regressions which include the full sample, but there are some striking differences in the science sample: students of teachers without subject-specific certification outperform those with subject-specific certification. These findings are somewhat counterintuitive. One possible explanation is that out-of-subject certified teachers tend to be individuals with practical experience in the field of science who have not obtained the credentials necessary for certification. A broad interpretation of the results is simply that certification really makes very little difference, most likely because of the weak nature of most of the requirements.

Contrary to conventional wisdom, mathematics and science students who have teachers with emergency credentials do no worse than students whose teachers have standard teaching credentials, all else being equal.

Overall, we do not find a strong relationship between state certification policies and student outcomes.[38] There are several potential explanations for this result. Perhaps the decision by states to impose or strengthen certification requirements may not be random. In other words, it is possible that states with poor student performance are systematically more likely to change certification policies. Our simple multiple regression framework does not take account of this relationship. It is also possible that state requirements do not represent a significant barrier to becoming a teacher and, therefore, do a poor job of screening out weak teachers, or that these requirements actually act to screen out able individuals who might otherwise opt to pursue a career in teaching.

Conclusions

Although teacher certification is pervasive, there is little rigorous evidence that it is systematically related to student achievement. In recent years, many states have adopted more stringent requirements for admission to teacher licensing programs and entry into the profession. Additionally, some states have increased opportunities for teachers to enter via alternative routes, and other states and localities faced with teacher shortages have increasingly hired teachers on emergency credentials. These trends make the issue of the relative effectiveness of different types of teacher certification and state certification policies an important one. In this paper, we shed some light on the issue using a large, longitudinal student level database. We explore the relationships between twelfth-grade student performance in mathematics and science and various teacher characteristics. Consistent with our earlier research, we find that *teachers with a mathematics degree or certification in subject outperform those without subject-matter preparation*. For instance, teachers with certification in mathematics and those with a B.A. in mathematics outperform those who lack mathematics-specific credentials.

Contrary to conventional wisdom, *mathematics and science students who have teachers with emergency credentials do no worse than students whose teachers have standard teaching credentials, all else being equal*. This result should, at the very least, cast doubt on assertions that standard certification should be required of all teachers.

Our study does not definitively answer the important policy question of whether imposing more rigorous standards in teacher licensure will lead to better student achievement. Such policies may lead to improved teachers. But it is also possible that these standards will restrict the supply of qualified individuals by discouraging them from even trying to become teachers. It is certainly an open question as to whether enough highly qualified individuals can be attracted into teaching at current salary levels. These results leave important questions unanswered. There is some evidence that teachers with different types of credentials are not randomly distributed across students, classes, or schools. This pattern needs to be more systematically investigated with data that contain a nationally representative sample of teachers (e.g., the *Schools and Staffing Survey*). Further, we do not have information that precisely matches teachers with state certification policies. To do so would require both more detailed information on the specific date, location, and content of an individual teacher's certification experience, and more comprehensive information on how state licensing policy has changed over time.

Appendix: Statistical Results

The appendix tables show the impact of specific teacher and state characteristics on student achievement in math and science. The coefficient for each variable shows the magnitude of the effect of a one unit change in that variable on student achievement. The T-statistic which is listed in parentheses next to the coefficient provides a statistical indication of how certain we are that this impact on achievement is different from zero. A higher T-statistic indicates that we are more confident that the variable in question does has an effect. A T-statistic of 2 indicates that we are about 95 percent confident that the effect of a particular variable is different from zero (this is the

Table A-1. Ordinary Least Squares Estimates of Twelfth-Grade Standardized Test Score for All Students (Absolute Value of T-statistic in Parentheses)

	Mathematics		**Science**	
	Model Without State Level Variables	**Model With State Level Variables**	**Model Without State Level Variables**	**Model With State Level Variables**
Teacher—years experience	.021 (1.7)	.018 (1.4)	.014 (1.4)	.015 (1.6)
Teacher has M.A.	-.461 (.8)	-.390 (.7)	-.488 (1.2)	-.377 (.9)
Teacher has ed. specialist degree	-.558 (1.6)	-.549 (1.6)	-.362 (1.2)	-.320 (1.1)
Teacher has Ph.D.	-.461 (.5)	-.407 (.4)	.716 (.9)	.805 (1.1)
Teacher has professional degree	-.771 (.2)	-.726 (.2)	-3.872 (1.9)	-3.625 (1.8)
B.A. major in subject	.411 (1.7)	.429 (1.8)	-.046 (.2)	-.032 (.2)
B.A. major in education	-.417 (1.9)	-.410 (1.8)	-.179 (.9)	-.253 (1.2)
M.A. major in subject	.548 (1.9)	.557 (1.9)	.108 (.4)	.115 (.4)
M.A. major in education	.139 (.5)	.128 (.4)	.058 (.2)	.105 (.4)
Standard certification in subject	2.098 (3.0)	2.463 (3.3)	.787 (1.3)	.426 (.7)
Probationary certification in subject	2.138 (1.7)	-.564 (.3)	.721 (.8)	-.227 (.2)
Emergency certification in subject	2.324 (2.2)	.622 (.4)	1.453 (1.8)	2.981 (1.9)
Other certification	.708 (.7)	.172 (.1)	.672 (.8)	3.008 (2.4)
State admissions test x standard certification	—	-.214 (.9)	—	.097 (.5)
State admissions test x probationary certification	—	2.835 (1.1)	—	2.678 (1.9)
State admissions test x emergency certification	—	2.503 (1.6)	—	-1.739 (1.3)
State admissions test x other certification	—	1.452 (1.0)	—	-1.693 (1.5)
State certification test x standard certification	—	-.341 (1.5)	—	.525 (2.9)
State certification test x probationary certification	—	1.240 (.5)	—	.403 (.3)
State certification test x emergency certification	—	.372 (.3)	—	-.427 (.4)
State certification test x other certification	—	-.435 (.3)	—	-2.720 (2.5)
Adjusted R^2	.85	.85	.66	.66
Sample size	3611	3611	2299	2299

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Table A-2. OLS Estimates of Twelfth–Grade Standardized Test Score For Students with Teachers with under Four Years of Experience Only. (Absolute Value of T-statistic in Parentheses)

	Mathematics		Science	
	Model Without State Level Variables	**Model With State Level Variables**	**Model Without State Level Variables**	**Model With State Level Variables**
Teacher—years experience	.418 (1.3)	.437 (1.4)	.129 (.6)	.179 (.8)
Teacher has M.A.	3.401 (.8)	4.216 (1.0)	.769 (.3)	.830 (.4)
Teacher has ed. specialist degree	.479 (.1)	.864 (.3)	-.491 (.3)	-.751 (.4)
B.A. major in subject	.138 (.2)	.583 (.6)	-.639 (1.1)	-.773 (1.3)
B.A. major in education	-.455 (.5)	-.116 (.1)	-1.156 (1.8)	-1.175 (1.8)
M.A. major in subject	.566 (.3)	.077 (0.0)	1.686 (1.1)	2.327 (1.4)
M.A. major in education	-1.086 (.6)	-.780 (.4)	.936 (.6)	1.317 (.8)
Standard certification in subject	2.954 (2.0)	3.631 (2.1)	-2.440 (1.7)	-2.285 (1.5)
Probationary certification in subject	4.038 (2.1)	.885 (.3)	-2.338 (1.5)	-3.124 (1.8)
Emergency certification in subject	3.019 (1.6)	.292 (.1)	-2.063 (1.3)	-.248 (.1)
Other certification	1.538 (.6)	3.152 (.9)	-2.814 (1.5)	-.242 (.1)
State admissions test x standard certification	–	-.192 (.3)	–	-.270 (.5)
State admissions test x probationary certification	–	2.640 (.9)	–	2.744 (1.3)
State admissions test x emergency certification	–	3.330 (1.4)	–	-1.492 (.7)
State admissions test x other certification	–	-7.239 (1.3)	–	.430 (.2)
State certification test x standard certification	–	-.835 (1.2)	–	.043 (.1)
State certification test x probationary certification	–	2.029 (.8)	–	.715 (.4)
State certification test x emergency certification	–	2.340 (1.0)	–	-1.694 (1.0)
State certification test x other certification	–	9.065 (1.6)	–	-4.557 (1.7)
Adjusted R2	.84	.84	.65	.65
Sample size	785	785	632	632

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generally accepted level of confidence to consider a variable "statistically significant"). For instance, the coefficient for teacher-years of experience in the first specification of the math model is 0.021. This indicates that an increase in teacher experience of ten years is predicted to raise students' test scores by 0.21 points (10 times 0.021), an increase of twenty years is predicted to raise students' test scores by 0.42 points (20 times 0.021), and so on. The T-statistic for this variable is 1.7, which suggests we are about 90 percent confident that this predicted effect is different from zero. Notice that a variable might have a large coefficient, as is the case with a Ph.D. variable (the coefficient value is -0.461) but a small T-statistic (0.5). In this case, we would predict a large effect of teachers having a Ph.D., but we are not very confident that this effect does in fact exist.

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[1] Hamilton Lankford and James Wyckoff, "The Dynamics of Teacher Salary Expense," paper presented at the annual meeting of the Association for Public Policy Analysis and Management, Washington, D.C., November 1997. Darling Hammond notes that half of the teachers who will be teaching ten years from now will be hired in the next decade. See Linda Darling Hammond, "What Matters Most: A Competent Teacher for Every Child," *Phi Delta Kappan* (1996): 193-201.

[2] National Commission on Teaching and America's Future (NCTAF), *What Matters Most: Teaching for America's Future* (New York: Author, 1996).

[3] Licensure refers to the process by which individuals are granted a credential by the state, assuring the public that the person is qualified to begin practicing in the profession. See M. Stephen Lilly, "Research on Teacher Licensure and State Approval of Teacher Education Programs," *Teacher Education and Special Education* 15, no. 2 (1992): 149-160. In teaching, but not in other professions, this is commonly used interchangeably with the term "certification," which implies a set of standards maintained by a profession.

[4] Linda Darling Hammond, "What Matters Most."

[5] The third question is equally important, but the data we use here do not allow for an examination of this issue.

[6] Sarah E. Turner, "The Training of Teachers: The Changing Degree Output in the Area of Education," paper presented at the 1998 Association of Public Policy and Management Meeting in New York, N.Y.

[7] The Holmes Group, *Tomorrow's Teachers* (East Lansing, Mich.: Author, 1986); Carnegie Task Force on Teaching as a Profession, "A Nation Prepared: Teachers for the 21st Century" (New York: Carnegie Forum on Education and the Economy, 1986).

[8] NCTAF, *What Matters Most*

[9] M. Stephen Lilly, "Research on Teacher Licensure."

[10] C.E. Feistritzer and David T. Chester, *Alternative Teacher Certification: A State-by-State Analysis 1998-99* (Washington, D.C.: National Center for Education Information, 1998).

[11] Robert P. Strauss, Lori L. Bowes, Mindy S. Marks, and Mark R. Plesko, "Who Should Teach in Our Public Schools? Implications of Pennsylvania's Teacher Preparation and Selection Experience," paper presented at the American Education Finance Association Conference, Mobile, Ala., March 1998.

[12] Some states also require prospective teachers to participate in observation of classroom skills, or internships, and others, such as Connecticut, require all new teachers to submit portfolios of their work with students. The Connecticut example illustrates the fact that some states compel teachers to pass additional hurdles after their initial licensure (Feistritzer and Chester, *Alternative Teacher Certification*)

[13] Strauss, Bowes, Marks, and Plesko, "Who Should Teach in Our Public Schools?"

[14] Pamela Ferdinand, "Nearly Half of Aspiring Teachers Fail Latest Massachusetts Test," *Washington Post*, 13 August 1998, A6.

[15] Jianping Shen, "Has the Alternative Certification Policy Materialized Its Promise? A Comparison Between Traditionally and Alternatively Certified Teachers in Public Schools," *Educational Evaluation and Policy Analysis* 19, no. 3 (1997): 276-283.

[16] Feistritzer and Chester, *Alternative Teacher Certification*

[17] Linda Darling Hammond, "Teaching and Knowledge: Policy Issues Posed By Alternate Certification for Teachers," *Peabody Journal of Education* 67, no 3 (1990): 123-154.

[18] Feistritzer and Chester, *Alternative Teacher Certification*. Shen shows that teachers with alternative certification are more likely to be minority and younger and more likely to teach in secondary schools than are those with standard certification. See Jianping Shen, "Has the Alternative Certification Policy Materialized Its Promise?" Prior to becoming teachers, those with alternative certification were far more likely to have held a non-teaching job. However, it is not clear that teachers accurately categorized the route by which they entered teaching. Ballou notes that follow-up interviews by the National Center for Education Statistics indicate a significant amount of

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response error to the question about teacher certification (Dale Ballou, "Alternative Certification: A Comment," *Educational Evaluation and Policy Analysis* 20 no.4 (1998): 315). He also notes that it is seemingly contradictory that many of those teachers who say they are alternatively certified also report having a B.A. in education. However, in a response to Ballou, Shen cites evidence that the response variance for the questions used in his data were within the acceptable range for the analyses and that many of those with alternative certification, who did not hold a B.A., likely earned a B.A. in education in the process of becoming alternatively certified. See Jianping Shen, "Alternative Certification: A Complicated Research Topic," *Educational Evaluation and Policy Analysis* 20 no. 4 (1998): 316-20.

[19] Stephen D. Goebel, Karl Ronacher, and Kathryn S. Sanchez, *An Evaluation of HISD's Alternative Certification Program of the Academic Year: 1988-1989* (Houston: Houston Independent School District Department of Research and Evaluation), ERIC Document No. 322103 (1989); Susan Barnes, James Salmon, and William Wale, "Alternative Teacher Certification in Texas," paper presented at the annual meeting of the American Educational Research Association, March 1989, ERIC Document No. 307316.

[20] Even a majority (63 percent) of education professors, those responsible for training the nation's teachers, admit that education programs often fail to prepare teachers adequately. See Steve Farkas and Jean Johnson, *Different Drummers: How Teachers of Teachers View Public Education* (New York: Public Agenda, 1997)).

[21] Eric Hanushek and Richard Pace, "Who Chooses to Teach (and Why)?" *Economics of Education Review* 14, no. 2 (1995): 101-117.

[22] Robert P. Strauss and Elizabeth A. Sawyer, "Some New Evidence on Teacher and Student Competencies," *Economics of Education Review* 5, no.1 (1986): 41-48.

[23] Ronald Ferguson, "Teachers' Perceptions and Expectations and the Black-White Test Score Gap" in Christopher Jencks and Meredith Phillips, eds., *The Black-White Test Score Gap* (Washington, D.C.: Brookings Institution Press, 1998).

[24] Students were sampled in two of the four subject areas so there may be cases where the same individual appears in both our science and math samples.

[25] The survey asks what type of certification a teacher holds—standard, emergency, probationary, other (private), or none in subject.

[26] The tables exclude 227 mathematics teachers and 147 science teachers with "private school certification."

[27] Ruth A Childs and Lawrence M. Rudner, "State Testing of Teachers: The 1990 Report," *Eric Digest* (December 1990); Data from the Educational Testing Service are available at http://www.edweek.org/htbin/fastweb/; Robert P. Strauss, "Teacher Preparation and Selection in Pennsylvania: Ensuring High Performance Classroom Teachers for the 21st Century," report to the Pennsylvania State Board of Education, 1998.

[28] Dale Ballou and Michael Podgursky, *Teacher Pay and Teacher Quality* (Kalamazoo: W.E. Upjohn Institute, 1997).

[29] The individual and family background variables include sex, race/ethnicity, parental education, family structure, family income, and tenth-grade subject test score. School variables include urbanicity, dichotomous variables identifying region, school size, the percentage of students at the school who are white, the percentage of students at the school who are from single parent families, and the percentage of students at the school who are on free or reduced lunch. Teacher variables include sex, race/ethnicity, years of experience at the secondary level, the teacher's degree level, and the type of teacher certification. Class level variables include class size and the percentage of minority students in the class.

[30] Female teachers are associated with lower test scores; the relationship between teacher race, ethnicity and gender and student scores is likely more complex than this simple linear model allows but we do not explore the issue here. For a more detailed analysis of this issue, see Ronald G. Ehrenberg, Dan D. Goldhaber and Dominic J. Brewer, "Do Teachers' Race, Gender, and Ethnicity Matter? Evidence from NELS88," *Industrial Labor Relations Review* 48, no.3 (1995): 547-561.

[31] Dan D. Goldhaber and Dominic J. Brewer, "Why Don't Schools and Teachers Seem to Matter? Assessing the Impact of Unobservables on Educational Productivity," *Journal of Human Resources* 32, no.3 (1997): 505-523.

[32] This figure is based on a two-year mean gain on the math test of roughly 5 points.

[33] Eric A. Hanushek and Richard R. Pace, "Understanding Entry into the Teaching Profession," *Economics of Education Review* (1995).

[34] Given that almost all public school teachers are certified, most of these teachers likely are certified out of subject.

[35] They control for this possibility by including "fixed-effects" which account for the possibility that there are important characteristics that vary by state, such as the preference for education, and that we cannot readily observe in the data. If there is a systematic relationship between state effects and our certification variables, we would expect our coefficient estimates to change in this specification of our model. The results of these specifications are not reported because they are so consistent with the model results reported in Columns (1) and (3) of Appendix Table A-1.

[36] These model specifications are not reported, but are available from the authors upon request.

[37] In the models shown in the appendix, the total effect of having a teacher with standard certification in a state with no admissions test requirement, for example, would be the estimated coefficient of that variable. The total effect of having a teacher with standard certification in a state that had an admissions test would be the sum of the estimated coefficient of standard certification and the estimated coefficient of the interaction variable ("state admissions test x probationary certification" in the table). A similar interpretation can be given to the effects of other types of certification.

[38] Though many of the coefficient estimates are not statistically significant, the magnitudes of the coefficients are, in some cases, quite large.

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[39] All regression models include individual and family background variables; school and class level variables; dummy variables for missing values of parental education, parents not in household, family income, percentage of students in the school who are white, percentage of students in the school from single parent households, the percentage of students in the school on free or reduced lunch, class size, the percent minority in the class, teacher race and gender, teacher experience, teacher degree level, teacher major, teacher certification.

All regressions include individual and family variables, and school level variables. The omitted degree category is B.A. The omitted major is non-education and non-subject. The omitted certification is certification out of subject and no certification.

[40] All regression models include individual and family background variables; school and class level variables; dummy variables for missing values of parental education, parents not in household, family income, percentage of students in the school who are white, percentage of students in the school from single parent households, the percentage of students in the school on free or reduced lunch, class size, the percent minority in the class, teacher race and gender, teacher experience, teacher degree level, teacher major, teacher certification. We do not report teacher Ph.D. or professional degree because there were no teachers in these samples with these degrees.

Who Gets Hired to Teach? The Case of Pennsylvania

Robert P. Strauss

This report takes a close look at teacher preparation and hiring practices in Pennsylvania, and then considers the qualifications of those who ultimately emerge from the process and are hired to teach in the state. It reviews in detail the various factors that conspire to produce a poorly qualified teaching force: low admissions standards for prospective teachers; vague curricular requirements at teachers colleges; low cutoff scores on licensing exams; and misguided (and sometimes questionable) hiring practices that place little emphasis on an applicant's content knowledge. While the weaknesses of preservice teacher training are not unfamiliar, Strauss contends that the flaws in the hiring process itself turn out to be so great that they may overwhelm even an improved preparation system.

Introduction

In the summer of 1998, Paul Cellucci, Acting Governor of Massachusetts, publicly proclaimed his dismay over the poor performance of prospective teachers on standardized examinations; 59 percent of them had failed at least one part of this examination, which was developed by National Evaluation Systems for the Massachusetts Department of Education. After his successful election in November, Cellucci reiterated his call to the legislature to fund the testing of already-employed teachers to find out what they know.

According to *Education Week*, in the second round of mandatory test-taking, 55 percent of first-time Massachusetts test-takers passed the *entire* exam; 81 percent passed the reading module, 75 percent passed the writing module, and 68 percent passed their subject matter tests.[1] Despite these substantial performance improvements over those in the first round, Governor Cellucci continues to call for the testing of veteran teachers as well. However, Stephen Gorrie, president of the 84,000 member Massachusetts Teacher Association, the NEA affiliate, says his union will "vigorously oppose" such testing. When Massachussetts Senator John Kerry was an announced presidential candidate, he made the teacher quality issue a campaign issue. Several proposals are circulating that would close down any Massachusetts school of education in which more than 20 percent of teacher candidates fail the exam.

As our century closes, most governors, responsible along with their legislatures for fulfilling their states' constitutional obligation to provide public education, recognize that continued prosperity will increasingly depend on how well educated their children are. The link from children's education to what they are taught and the quality of those teaching is well understood. Making sure that classroom teachers know and can effectively teach more demanding material, however, is no simple matter, and one that states are struggling with.

Making sure that classroom teachers know and can effectively teach more demanding material is no simple matter.

My purpose here is to explain how one state prepares its teachers for the public school classroom, describe who in fact gets hired and why, and discuss in practical terms what is involved in improving the quality of classroom teachers.

Pennsylvania was chosen as the case study because I have been examining and writing about it for better than a decade. This research is unusual because it has been done with all of the pertinent administrative records of the state under signed confidentiality agreements. A longer monograph, which I developed for the Pennsylvania State Board of Education in 1997 and which was publicly released in July 1998, supplies the basis for this essay.

The section that follows this one lays out the basic facts of how Pennsylvania colleges and universities offer state-approved course work so that their students can become licensed public-school teachers. It also discusses key variables or policy decisions that affect the nature or quality of the classroom teacher.

The third section describes who actually gets hired to teach, and examines their quality in terms of standardized-test scores. It also describes the results of a unique survey of Pennsylvania school hiring practices, and relates varying practices to different measures of student achievement.

The final section analyzes conventional and unconventional strategies to improve the quality of classroom teachers.

Because of space limitations, I do not confirm via a literature review the common sense notion that students assigned to teachers with more subject knowledge are students who themselves perform better in the subject matter when independently tested.[2]

I caution the reader that, as between analysts who conclude that the teacher quality problem is due to teachers never having learned how to teach properly (i.e., not having been properly instructed in pedagogy), and those who conclude that the problem stems from their never having learned their subject matter (i.e. not having achieved proper content knowledge), I fall squarely into the second camp.[3] Also, among those who opine on how to improve teacher quality, I tend to emphasize more than other analysts the importance of the hiring decision as contrasted with simply improving the pool of applicants.

Teacher Licensing in Pennsylvania

Several state agencies are involved in teacher licensure. All derive their authority from the state constitution and acts of the General Assembly.

The Pennsylvania School Code and Code of Regulations are the official legal documents implemented by the Governor and Pennsylvania Department of Education (PDE).[4] Legislative action can supersede any regulatory proposals by the Executive Branch or State Board of Education. This means that any attempts to alter teacher licensure requirements through the regulatory process can be impeded by interest groups (e.g., teachers unions, school board associations, etc.) that appeal to the General Assembly.

State licensing procedures for teachers have gone through several metamorphoses since the turn of the century. Elsbee observed in 1939 that teacher reform in the first third of this century involved centralization of the licensing function in the state department of education, the substitution of approved training for examinations, and the differentiation of certificates according to the nature of the teachers' preparation.[5]

In the years since Elsbee noted these trends, fashion and practice in a number of areas have changed. For example, teacher testing has again become widespread since the mid-1980s and is now used in conjunction with program approval to verify that prospective teachers know their subject matter at some competency level. Central licensing within state departments of education has been replaced in some states by independent licensing bureaus that report directly to legislatures and are separately funded.

State education agencies have evolved to deal with the regulatory standards that a college or university must meet for its teacher preparation program to be approved; with the requirements for student teaching; with the definition of core areas of teacher knowledge to be tested through standardized examinations and the setting of passing scores for those exams; with ongoing professional development requirements; and with procedures for revocation and suspension of certification.

Certification

Pennsylvania is one of thirty-nine states that require prospective teachers to earn a degree at a state-approved college or university. Unlike many states, however, Pennsylvania does not stipulate what courses the candidate must take. Rather, the state relies on PDE's program approval process to review each institution's requirements or curricula. Pennsylvania education regulations currently do not stipulate any admissions requirements for teacher preparation programs, although the prospective teacher must pass standardized general and subject matter tests produced by the

Educational Testing Service.[6] Thus, most of the quality control is imposed by the teacher preparation institution itself with little state supervision or oversight.[7]

Teacher preparation programs may be reviewed at any time by PDE but reviews must be conducted at five-year intervals. Programs must meet both general and specific standards. The major general standards for approval include the following: the institution's education faculty shall have experience at the elementary, secondary, supervisory, or administrative level commensurate with the candidate's area of study; the institution shall document policies for admission into, retention in, and completion of a program[8]; the institution must encourage nontraditional students; the general education portion of a certification program should be equivalent to at least one-third of a baccalaureate degree and should include studies in the arts, humanities, and the natural and social sciences; the program will address issues of diversity and multiculturalism; and the instructional certification program shall require professional studies in teaching methodology (e.g., human development, historical issues in education, developmental reading and reading in the content area, instructional resource identification, and computer literacy).

Moving prospective teachers from schools of education to academic departments to obtain their subject matter training will no doubt be an improvement.

PDE regulations also govern the specific standards that each program must satisfy in order to be approved. For example, a biology program must include the study of living materials in laboratory as well as field, and the interaction of biology with ethical and human implications in areas such as genetic screening, cloning, organ transplant. An approved program in elementary education requires study of the process of language acquisition and the measurement and evaluation of learning in the cognitive, psychomotor, and affective domains, among other things. During student teaching, the candidate must demonstrate competency in these areas.

Individuals seeking to become certified as teachers in Pennsylvania must be of good moral character; produce a physician's certificate verifying that they possess the mental and physical capabilities required for teaching; attain the age of eighteen; earn a baccalaureate degree (exceptions involve temporary and vocational certificates); and complete an approved program of teacher education.

Certification in Pennsylvania involves two stages: provisional and permanent. The provisional certificate is valid for six service years. Candidates must pass the Pennsylvania Teacher Certification Test, which consists of four areas: Basic Skills; General Skills; Principles of Learning and Teaching, K-6 or Principles of Learning and Teaching 7-12; and Specialization Areas (see discussion below).

Movement from a provisional to permanent certificate requires completion of an induction program developed by the school district; twenty-four semester hours of course work beyond the baccalaureate; six credit hours every five years in department-approved in-service education courses, collegiate studies, or studies at degree-granting institutions every five years; and satisfactory completion of three years of service.

In order to be certified to teach a particular subject, the candidate must fulfill a program of study that the college has stipulated will meet the specific program approval standards, and that has been approved by PDE. The teaching certificate contains an *endorsement* by the state which certifies that the teacher is legally qualified to teach in the particular subject area. (Separately, PDE states what endorsements are required to teach specific courses at specific grade levels.) Endorsements require graduation from an approved program and passage of the appropriate subject test.

The emergency certificate is endorsed for a single subject. It is issued only at the request of an employing public-school entity or the equivalent. The chief administrator of the requesting entity must certify that he has exhausted all reasonable avenues and has not located any properly certified applicant. Applicants for emergency certificates must meet a state health requirement, U.S. citizenship requirement, have a bachelor's degree; pass the Professional Skills Test; and not have been terminated from a position in a public school.

An intern certificate is valid for three calendar years. It is designed to allow entry into the teaching profession for qualified persons who already possess a baccalaureate degree. The candidate must complete an approved certification program's pre-admission screening and be accepted into the program. He must pass the basic skills, general knowledge, and subject matter area portion of the test. Upon completion of his internship, the candidate must pass either the Praxis Principles of Learning and Teaching K-6 for Elementary and Early Childhood Education or the Principles of Learning and Teaching 7-12 for secondary areas before receiving a provisional certificate. Continuous enrollment and satisfactory progress in a Teacher Intern Program lead towards a Level I Certificate.[9]

Details that Matter

Having shown some major components of Pennsylvania's regulations, let us now review them with a careful eye.

For the past six months, the Governor and Pennsylvania Department of Education have been engaged in protracted negotiations with the Pennsylvania Association of Colleges of Teachers Education (PACTE) over moving from the program approval standards described above to new standards based on requiring a full college major (e.g., that prospective biology teachers take the same course work as a true biology major), and both admissions and graduation grade point average requirements.

While such a change has enormous merit, whether it becomes state policy will depend on the tenacity of policymakers to insist that a biology teacher must know biology, and the willingness of education schools to suffer what they claim will be catastrophic reductions in overall enrollment to allow this to happen.

Moving prospective teachers from schools of education to academic departments to obtain their subject matter training will no doubt be an improvement. There are, to be sure, all kinds of biology departments, and all kinds of required course work to become a biology major. Still, this is a minor concern compared to what current program approval standards permit.

The vagueness in today's standards also means that the Department can choose to enforce them more or less leniently. Teacher preparation can be a lucrative activity for a college or university, and there are significant tensions over market share. The combatants are the private colleges and universities, which receive no state subsidies, versus the fourteen state-supported former normal schools whose state appropriations are their fiscal lifeblood, along with the three state-related universities (University of Pittsburgh, Penn State, and Temple) which receive substantial state appropriations and engage in significant teacher training. Considerable pressure is applied when gubernatorial administrations change to place a champion in the position of Deputy Secretary for Higher Education in the Pennsylvania Department of Education. That person has primary authority to approve or disapprove a program and substantial leeway to do what he or she wants.

Vague state curricular requirements virtually guarantee wide diversity in the teacher knowledge base.

Comments on Program Standards

Note that there are few restrictions or prescriptions about the faculty of an approved program. They need not be expert in the subject areas in which prospective teachers wish to teach. The only requirement is that some must have experience in the public schools.

There is no obligation for the faculty to have Ph.D.'s or engage in scholarly research, and there is no mention of what the tenure track faculty should have by way of education background or expertise, as contrasted with what the adjunct faculty must have. Requiring, in effect, that only former school teachers teach prospective teachers has the effect of ensuring that current classroom practices will be perpetuated.

The specific program standards are also problematic. The curricular requirements for a biology teacher merely require him or her to take studies with living materials in the laboratory as well as to have field experiences. These "requirements" could encompass almost anything. First, "studies" are not credit hours. Second, living materials could be studied by simply going to a zoo and looking at animals! Third, simply requiring a college or university to require "...studies or experiences in..." without providing time or credit requirements encourages the training institution to economize on faculty and student time.

Not detailing the composition of particular studies, such as what must be included in the content of a chemistry or cellular biology course, means that the requirements might be met with a few survey courses. The effect of structuring curricula requirements in this fashion is to put the obligation for oversight and quality control on the education department in the college or university rather than on the state agency's shoulders.

Such vague state curricular requirements virtually guarantee wide diversity in the teacher knowledge base. One can envisage a college education department, facing financial pressures, that cuts the number of specialized biology courses, and substitutes survey courses. The "...studies of and experiences in..." test would still be met.

Europeans enforce much stricter standardized testing for prospective teachers. In France, no more than 15 percent pass the most demanding certificate examination.

Such vagueness actually gives local school districts almost complete discretion in hiring. Consider what these vague standards mean for Pennsylvania's 106,000 current classroom teachers. Given that virtually all of them are tenured, what they had to learn to earn a teaching certificate is what they know today. And given reciprocity among the states, such low standards mean that other states hiring teachers who meet Pennsylvania's low requirements face equal uncertainties.

Admissions Standards

Pennsylvania requires each college education department or education school to have admissions and retention requirements, but does not specify what these must be. For example, there is no state requirement that only those earning a bona fide high school-diploma may be admitted into an approved teacher preparation program.

More importantly, Pennsylvania does not stipulate as part of its program approval requirements any minimum score on the American College Test (ACT) or Scholastic Assessment Test (SAT).[10] Connecticut, by contrast, requires that applicants demonstrate minimum passing scores on one of several examinations. If the student offers the SAT, for example, he must have a combined SAT score in excess of 1,000 (with neither portion falling below 400). In 1997, a combined SAT score of 1,000 was at the 50th percentile. This is not very high, but it is a standard.

Passing the Tests

Pennsylvania, like most states, requires that prospective teachers earn passing scores on various standardized tests. This requirement was first established in 1987 when the General Assembly directed the Department of Education to require standardized tests of teachers; however, the passing test scores are set by panels of Pennsylvania teachers, not by the independent agency that constructed the tests. These passing scores were kept so low that, historically, about 95 percent of those taking the tests passed them.[11]

High pass rates on standardized exams can mean several things: the test is easy, the passing score is set very low, and/or the candidates taking the test are all highly qualified. Remarkably, Pennsylvania was unable for ten years to set any passing scores for chemistry and physics, the result being that everyone who took these tests, and passed the general skills tests required of all prospective teachers, was awarded a chemistry or physics certificate.

Such high passing rates cannot be found in other areas of professional licensure. It is common for fewer than half of those taking the national CPA exam to pass all parts, and about the same for those taking state bar exams. Europeans also enforce much stricter standardized testing for prospective teachers. In France, no more than 15 percent pass the most demanding certificate examination.[12]

Emergency Certificates and Waivers

Issuance of emergency certificates is the primary mechanism by which local superintendents circumvent Pennsylvania's modest certification requirements. This essentially allows a local superintendent to hire whomever he wishes and this permits the employment of either more or less academically qualified teachers. My understanding of actual practice in Pennsylvania is that it is typically used to deal with demands by school board members and other interested members of the community to hire particular individuals regardless of their academic qualifications.

The key to see how this can happen is to consider carefully the phrase "...no fully qualified AND properly certified applicant available..." Since the term "fully qualified" is not defined anywhere in the regulations, the local superintendent may interpret it to mean whatever he needs to in order to achieve his hiring objective. The superintendent merely has to plead with the state certification bureau, typically a few weeks before the start of classes, to issue the emergency certificate, and assert that he could not find anyone who is fully qualified. Swamped, and perhaps receiving supporting evidence from other interested parties, certification bureau officials get pressured into granting local officials what they ask for.[13]

The supply of new teaching certificates continues to exceed the aggregate demand.

Michigan, by contrast, requires the Superintendent of Public Instruction to find that the education of children is at risk should an emergency certificate not be granted. That mechanism makes the education of the children the decision criterion, and requires the state to make a positive finding about the relationship between the children's education and the applicant for the emergency certificate rather than requiring a state official merely to weigh a local official's plea on behalf of the noncertificated applicant.[14]

Professional Development

Much is made in Pennsylvania of the subsequent education requirements that must be met in order to obtain a permanent certificate; yet in-service courses count equally with courses from approved university programs. In-service training typically occurs in a district by declaring a school in-service day which translates into the children staying home and the teachers enjoying a seminar, with coffee and doughnuts and catered lunch.[15] The twenty-four-hour credit requirement can also be earned in part via the required teaching internship; this effectively permits double counting of student teaching.

The Teacher Market

Much of the impetus for teacher quality reform has come from the observation that a large fraction of the teacher force is eligible for retirement in the next decade. As much as 60 percent of Pennsylvania's classroom teacher force could turn over by 2006. At fifty-five years of age and thirty years of service, a Pennsylvania teacher is eligible for full retirement benefits. The legislature has also kept open an early retirement window without penalty at fifty-five and 27.5 years respectively. In 1993, about 10,800 teachers and administrators, 9 percent of the professional personnel in Pennsylvania's public schools, elected to retire. (Half of the districts' business managers elected to retire.)

Large-scale retirements create an opportunity to upgrade the skills of the teacher workforce if teacher preparation institutions can be encouraged to raise their admissions and curricula standards.[16] In 1996–97, the median age of Pennsylvania classroom teachers was forty-five years. Median years of total experience (countable for state retirement plan purposes) was sixteen years.[17]

While a retirement cliff is nearing for many districts, the hiring of new teachers straight out of education school has been modest: about 1,300 newly certified teachers were hired in each of the past several years; about 5,100 total teachers are annually hired. The supply of new teaching certificates continues to exceed the aggregate demand: about 20,000 new teaching certificates are produced each year by Pennsylvania's ninety-one approved programs. Over the period 1991-97, 39,000 elementary teaching certificates were awarded, equivalent to the total number of employed elementary teachers statewide![18] Far more elementary-school teachers have been trained in Pennsylvania than are being hired—a pattern that is likely to persist into the indefinite future unless corrective action is taken.[19]

California encourages teacher market realism by statutorily obligating each teacher preparation institution to publish its graduates' employment rates. This is one of the reforms proposed by the Pennsylvania State Board of Education but resisted by many schools of education as unnecessary and administratively infeasible. They claim to have no mechanism to follow their graduates' labor market activities. Deans of education schools contest my conclusion that most school teachers trained and certified in Pennsylvania are never able to find a teaching position by asserting that their graduates take jobs outside of the state. This may or may not be true.

How California teacher preparation institutions are able to track the employment of their graduates while Pennsylvania's institutions cannot remains a mystery. Since records were kept, Pennsylvania has certified over 516,000 public school teachers, while only 106,000 are currently employed in the classroom.[20]

Teacher Quality

When high-school seniors take SATs, they are asked to report their intended college major. The College Board then reports the results. Table 1 displays the mean verbal and math SAT scores from Fall 1996 as reported by Pennsylvania high-school seniors. It also displays the U.S. scores. Several points are evident. First, Pennsylvania's SAT scores are lower than the national scores in every field.

Second, Pennsylvania's high school seniors intending to become education majors scored substantially below their classmates interested in pursuing other academic majors. For example, the mean SAT math score of an intended education major was 471 compared to 614 for intended math majors, a difference of 30 percent. When the same education major's verbal mean SAT score of 483 is compared to the 595 of a language and literature major, we observe a 26 percent difference.

Table 1. Fall 1996 SAT Scores of High School Seniors by Intended College Major: U.S. and Pennsylvania

Intended Major	Mean SAT Verbal	Mean SAT Math	Combined Math & Verbal	Combined Math & Verbal Percentile
US Education	487	477	964	37.7%
PA Education	483	471	954	35.3%
US Mathematics	552	626	1178	85.3%
PA Mathematics	542	614	1156	81.9%
US Biological Science	546	545	1091	69.0%
PA Biological Science	540	528	1068	63.7%
US Physical Science	575	595	1170	84.1%
PA Physical Science	562	578	1140	79.1%
US Language & Literature	605	545	1150	80.9%
PA Language & Literature	595	527	1122	75.6%
US Business	482	500	982	42.2%
PA Business	479	488	967	38.5%

Source: ETS Communication to author, author's calculations.

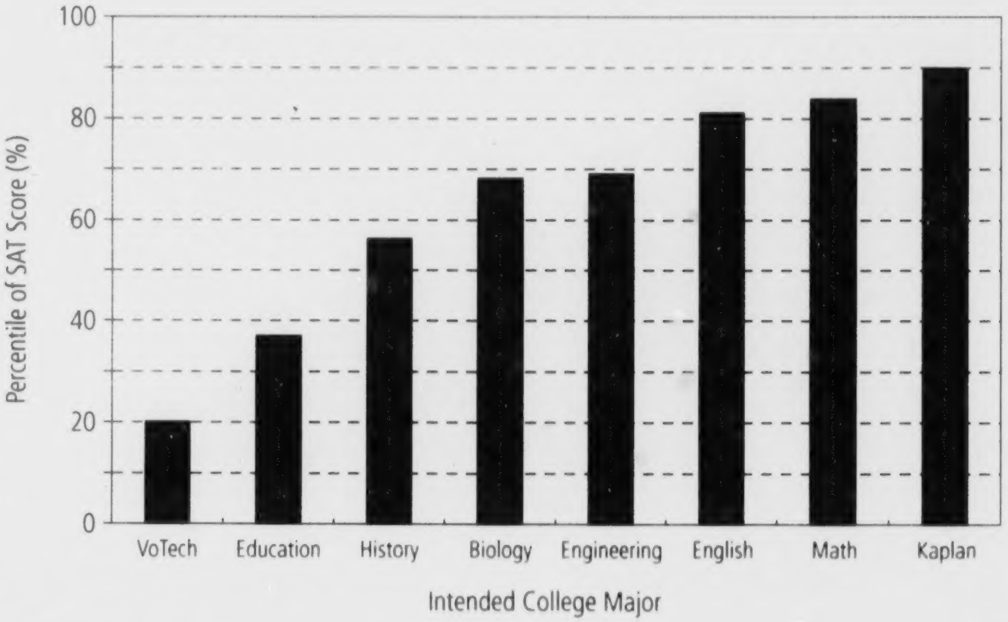
The combined math and verbal score of those interested in becoming teachers was at the 35th percentile of all those in Pennsylvania who took the SAT while those intending to be math or English majors was above the 80th percentile.

If the academic achievement level of classroom teachers hovers at the 35th percentile, that means that two-thirds of the students in the classroom have stronger scholastic achievement than did their classroom teacher a few years before.

The fact that future teachers' SAT scores are well below average should be contrasted with those required by Kaplan Education Systems, which sells a well-known SAT preparation course. Kaplan will not consider hiring anyone to teach in its SAT preparation program who scores below the 90th percentile on the math and verbal SAT tests. Princeton Review has a similar requirement. Figure 1 displays the *relative* position of combined SAT scores by intended major in 1997, and contrasts what Kaplan requires its instructors to have.

Most states independently measure the general and specific knowledge of prospective teachers as they are finishing their college degree. ETS historically sold the National Teacher Examination (NTE) to thirty-four states, but is replacing it with the Praxis examinations. Table 2 displays several general skill-and-knowledge examinations that

Figure 1. Combined National Math and Verbal SAT Scores of HS Seniors by Intended College Major, 1997



Source: ETS communication to author and author's calculations.

ETS offers for teaching candidates, and the two specialty biology tests that prospective Pennsylvania biology teachers must take, along with passing scores as of 1998 for the Commonwealth's biology teachers.[21]

Consider the Biology Knowledge 2 test. Pennsylvania's biology teachers needed a score of 135 to pass it. Since scores range from 100 to 200, a score of 135 means that students must correctly answer 35 percent of questions of average difficulty to pass the test. To put these figures in further perspective, 135 was at the 25th percentile of the national distribution of Biology Knowledge 2 scores.[22] It's not unreasonable to ask why a panel of experienced teachers in Pennsylvania believed that their state's biology teaching candidates need correctly answer only 35 percent of questions of average difficulty.

Table 2. Passing Core Battery (CB) and Biology Test Scores for Biology Teaching Candidates in Pennsylvania (1998)

Standardized Test	Passing Score	Questions to be answered correctly to pass
CB Communications	646 (out of 990)	53.5%
CB General Knowledge	644 (out of 990)	53.2%
CB Professional Knowledge	643 (out of 990)	53.1%
Biology Knowledge 1	144 (out of 200)	44.0%
Biology Knowledge 2	135 (out of 200)	35.0%

Source: Pennsylvania Department of Education, Educational Testing Service, author's calculations.

Given the vast numbers (20,000+) of teaching certificates awarded each year by Pennsylvania teacher preparation institutions, one may fairly ask what is the knowledge level of these potential classroom teachers. Given the weak program approval standards discussed above, and the protestations from some deans that their school's curricula and graduation requirements are more demanding than the state standards, it is useful to check independently to see how these prospective teachers (or the total of supply from which districts may hire) do on independent, standardized tests. Table 3 shows the range of NTE scores for nine subject areas, and identifies the college or university that had the highest and lowest median NTE scores for each. The table also translates the high and low median scores into the percentage of correct answers on questions of average difficulty. With regard to the top scores, four private colleges—Swarthmore (3), Lafayette (3), Chatham (2), and Bryn Mawr (1)—shared the honors. Translated into percent correct, their scores ranged from 63.5 percent correct in chemistry to 84.5 percent correct in English.

With regard to the lowest median NTE scores in the nine subject areas, they occurred among six institutions—Cheyney (3), Holy Family (1), King's College (1), Lincoln (1), Ursinus (1), and Waynesburg (2). The range of percent correct went from 4.7 percent in physics to 44.6 percent in English. Remarkably, if one correlates the employment rate of each institution's graduates by subject area with the institution's median NTE score, there is no reliable relationship except for mathematics (+.24) and chemistry (-.26).[23] The latter underscores the harsh reality that, when no standards were imposed during the ten-year hiatus, districts were careless about whom they hired, so long as the person had a certificate to teach chemistry.[24]

Who Gets Hired to Teach in Pennsylvania and Why?

It is not surprising to find that teacher preparation programs vary widely in what their graduates know about the subjects they intend to teach, for the programs also vary widely in their admissions standards, curricular requirements, cost, and faculty. For

Table 3. Teacher Test Scores in Pennsylvania by College or University Median National Teacher Exam (NTE) Scores (1987-97) in 9 Specialty Areas:

Specialty Area	Number of Programs	Top Program	Passing Score	Top Program's Median NTE	% Correct of Median
Elementary	79	Lafayette	570	710	62.2%
Mathematics	79	Swarthmore	540	740	66.2%
Chemistry	64	Chatham	500	720	63.5%
Biology	77	Lafayette	580	> 800	>74.3%
Physics	50	Swarthmore	440	810	75.7%
General Science	64	Chatham	None	> 740	>66.2%
Earth and Space	32	Lafayette	570	> 800	>74.3%
English	78	Swarthmore	490	875	84.5%
Social Studies	79	Bryn Mawr	580	685	58.8%

Specialty Area	Number of Programs	Bottom Program	Passing Score	Bottom Program's Median NTE	% Correct of Median
Elementary	79	Ursinus	570	< 570	<43.2%
Mathematics	79	Cheyney	540	500	33.8%
Chemistry	64	Waynesburg	500	380	17.6%
Biology	77	Cheyney	580	355	14.2%
Physics	50	Lincoln	440	285	4.7%
General Science	64	Holy Family	None	520	36.5%
Earth and Space	32	King's College	570	<350	<13.5%
English	78	Cheyney	490	580	44.6%
Social Studies	79	Waynesburg	580	550	40.5%

Source: Author's tabulations of NTE scores in Pennsylvania.

children and parents, the key issues are: who winds up in front of the children, what do they know, and how does it affect the students' learning?

Because Pennsylvania school districts typically do not hire teachers from preparation programs located more than seventy miles away, it makes sense to examine the NTE scores of employed teachers by Metropolitan Statistical Area (MSA).[25] Table 4 shows just how variable the knowledge of employed school teachers is. In the Allentown MSA, for example, there are twenty-two school districts. If we tabulate their median mathematics NTE score, the district whose teachers had the highest score had a 760 out of 990, or correctly answered 68.9 percent of questions of average difficulty. The school with the lowest median NTE score in the same MSA had a 540 (the minimum passing score under state regulations) or correctly answered 39.2 percent of questions of average difficulty.

In biology, the district with the highest median biology NTE scored 910 out of 990 or correctly answered 89.2 percent of questions of average difficulty, while the bottom district's median NTE score was 580 or correctly answered 44.6 percent of

Table 4. Employed Classroom Teacher Content Knowledge: Highest and Lowest District Median NTE Scores by Pennsylvania Metropolitan Statistical Area

MSA	Number of Districts In MSA	MSA's High & Low NTE Score Mathematics	MSA's High & Low NTE Score Biology	MSA's High & Low NTE Score Chemistry	MSA's High & Low NTE Score Physics
Allentown	22	760-540	910-580	530-390	640-540
Altoona	7	610-560	660-620	720-690	NA
Beaver	15	720-540	750-725	590-470	700-410
Erie	13	650-580	790-610	560-490	460-380
Harrisburg	29	720-570	900-630	690-460	650-430
Johnstown	23	760-570	720-490	560-490	700-460
Lancaster	16	800-620	860-630	710-520	660-360
Philadelphia	62	850-560	825-600	770-440	820-460
Pittsburgh	80	730-510	860-480	770-415	740-380
Reading	18	730-510	780-620	640-530	NA
Scranton	33	710-560	810-390	NA	520-380
Sharon	12	790-590	750-675	600-450	NA
State College	4	800-640	840-690	NA	NA
Williamsport	8	650-550	NA	NA	NA
York	21	840-570	755-590	685-550	660-450
Non-MSA	137	800-540	910-570	910-390	645-450

Source: Author's calculations.

questions of average difficulty. It is difficult to imagine that students exposed to a teacher with half the content knowledge of another would be getting the same biology education.

If one carefully examines Table 4, one sees that, in chemistry and physics, districts hired teachers with little subject knowledge. Somewhere in the Lancaster MSA, a physics teacher was hired who scored 360 out of 990 on the NTE physics test. This translates into answering correctly 14.9 percent of questions of average difficulty. This occurred, as noted above, because for ten years the state failed to set passing scores in chemistry and physics, and simply certified anyone who took the exam and passed the core battery tests.

In view of the wide variations in results shown by employed teachers on standardized tests, we might ask, what is happening? Is the variation due to inadequate salary levels or large variations in district wealth? If one looks closely at the scores of elementary teachers hired, one can find examples of both rich districts being selective and rich districts hiring elementary teachers with low NTE scores, as well as examples of poor districts hiring elementary classroom teachers with high scores and poor districts hiring teachers with low NTE scores.[26]

One can find examples of both rich districts being selective and rich districts hiring elementary teachers with low NTE scores, as well as examples of poor districts hiring elementary classroom teachers with high scores and poor districts hiring teachers with low NTE scores.

The Legal Framework

Some insights into these haphazard hiring patterns can be gained by examining the statutes governing the teacher hiring process in Pennsylvania, and the broader issue of district governance.

Pennsylvania law is silent about how teachers are to be recruited and hired except in Pittsburgh and Philadelphia. These two districts are obligated to hire from lists that rank candidates by measurable characteristics, and must present at least three names for each vacancy to the local board. Nowhere can one find in the School Code that districts seeking to hire teachers must advertise in newspapers of general circulation. Indeed, one encounters protestations of unnecessary expense in response to such suggestions.

The decision by a superintendent to make a job offer to an applicant must first be approved by public vote of the board. State law prohibits any school board member from voting on the employment of a relative. Yet these rules are less than they seem. Let us examine in more detail the requirements to be a school board member, and the rules governing a board member's conduct. To be eligible to stand for election, a prospective member of a school board in Pennsylvania need only be a citizen of the Commonwealth, a person of good moral character, eighteen years or older, and a resident of the district for at least one year. Direct self-dealing is limited statutorily in several ways:

School employees are prohibited in Pennsylvania from serving on a board where they are employed; however, this does not preclude them serving on a board where they live if the district of residence is different from the district of employment.[27]

School board members are prohibited under the School Code from voting on the appointment of a relative to a teaching position, and the Code prohibits a school board member from being interested in, or doing business, with the school district during the term of office. These are, however, only *direct* prohibitions, and do not deal with indirect conflicts of interest that might involve, say, a spouse, relative, or friend engaging in business with the district in which the school board member serves.

The Code prohibits a school board member from receiving, directly or indirectly, monies as a consequence of voting on matters which come before the board. By not participating in a vote on a contract decision, or by delegating decision-making over financial matters to a superintendent, or to other board members, a board member is relieved from this prohibition.

Prior to 1968, the oath of office administered to elected board members obligated them to affirm "...that I will not knowingly receive, either directly or indirectly, any money or other valuable thing for the performance or nonperformance of any act or duty pertaining to my office, other than compensation allowed by law." Effective November 22, 1968, however, the oath of office merely required affirmation to support, obey, and defend the State and US Constitution, and to discharge the duties of office with fidelity.[28]

The Pennsylvania Ethics Commission is responsible for enforcing these modest rules. Examination of its decisions and case law indicates that the Commission interprets the ethical obligations of elected school board members narrowly. This means one can simply abstain from voting and log roll while friends and family are hired by the district on whose board one serves.[29] Moreover, by abstaining from voting on any contract or other money issue, a determined (and not ethically challenged) school board member can benefit indirectly from the board's appropriation of monies.

Districts consider test scores no more heavily than an applicant's willingness to engage in extracurricular activities.

Hiring Practices and Procedures

The second issue that arises when examining the test scores of employed teachers is the nature of the personnel process itself. In the Spring of 1997, a survey instrument was designed and field-tested to elicit the ways by which local school districts go about hiring classroom teachers.[30] The State Board of Education wrote each superintendent, school board president, and union president asking for their cooperation in filling out the fourteen page questionnaire. Confidentiality was guaranteed, and each stakeholder was told that the others were receiving the same questionnaire.

The following major points emerge from the resulting data:

1. About 40 percent of current teachers in the district obtained their high-school diploma or attended high school in the district where they work;
2. Only 49 percent of the districts have written hiring policies;[31]
3. About one third of districts fill full-time openings from substitutes or part-time teachers whom they already know; 14 percent of full-time positions are filled from internal transfers within the district.
4. Only 25 percent of districts advertise openings outside of Pennsylvania; about 83 percent advertise outside their district; the major forms of advertising are the *Pennsylvania School Boards Association Bulletin*, word of mouth, bulletin boards in the district, education schools' placement offices, and local newspapers;
5. Twenty-six percent of districts reported requesting waivers from the Department of Education and 65 percent (of those requesting) obtained a waiver; only 27 percent of those requesting waivers stated that a waiver was requested because applicants were not fully qualified;
6. Independent evidence on content knowledge and caliber of certifying institution was about as important in recruiting as indications of community involvement, willingness to assist in extracurricular activities, and non-teaching work experience;

These results suggest, consistent with Ballou and Podgursky, *Teacher Pay and Teacher Quality*, that most districts place little emphasis on the content knowledge of applicants other than what is reflected in their grade point averages.[32] Districts consider test scores no more heavily than an applicant's willingness to engage in extracurricular activities.

Student Outcomes

A question naturally arises as to whether the teacher employment process is associated with different levels of pupil achievement. Common sense suggests that the more careful districts are in selecting teachers, and the more attention that is paid to the academic background and achievement of teachers in the selection process, the more likely it is that districts' own students will perform better on competency and achievement tests.

Two kinds of evidence are available to investigate this relationship: simple correlations between measures of hiring practices and student achievement, and multiple regression results that hold constant the socioeconomic background of the students and the educational attainment of their parents.

What we find, broadly, is that the more professional the teacher-hiring process, the stronger is student achievement.

Statistical analysis revealed the following relations:

1. The higher the fraction of a district's teachers that attended its own high school, the lower *all* of its test scores are, and the lower is the fraction of high-school seniors with post-secondary education plans.
2. The more frequently a district requested waivers from PDE, the lower the various measures of student achievement. Correlations here range from -.12 to -.18.
3. Districts that request information beyond the mandatory state form tend to have students who achieve more highly across all grades, and also have a higher fraction of high school seniors with post-secondary education plans. Correlations here range from +.168 to .25; all are statistically significant. For instance, requesting written recommendations was significantly related to student achievement. Since candidates must obtain in writing others' opinions of their skills, this can be viewed as an indicator of how seriously the district views the application process. Evidently, districts that make this effort also have students who achieve more highly.
4. Initial screening on the basis of grades is associated with superior student achievement, as is screening on the basis of past performance in teaching and references and recommendations. Screening based on teaching experience is not associated with higher student performance. Where districts emphasize advanced degrees, test scores, and essays in their screening process, eleventh-grade student performance in math and reading is higher.
5. Where districts emphasize community involvement and willingness to do extracurricular activities in their initial screening, there is generally no relationship to student achievement.
6. Where districts screen applicants on the basis of whether or not applicants are district residents, student achievement at all grades is lower. These are some of the strongest correlations found: they range from -.20 to -.30.

The above correlations conform with common sense: districts that use more professional personnel practices tend to be districts whose students are more likely to pursue post-secondary education and have higher math and reading achievement scores. Yet it is easy to imagine other factors, such as the socioeconomic status of students' families, playing important roles in explaining student achievement, and these need to be accounted for as well.

Districts that use more professional personnel practices tend to be districts whose students are more likely to pursue post-secondary education and have higher math and reading achievement scores.

Econometric analysis that takes into account these background factors found the following: [33]

Districts that hire their own graduates, holding constant the socioeconomic status of students currently being taught, are school districts whose achievement is lower. A 1 percent increase in the percentage of teachers hired from a school's own graduates is associated with a reduction of two-thirds of one percent in the percentage of high-school seniors with post-secondary education plans.

Hiring insularity depresses various measures of student achievement. These depressing effects are five to ten times the size of the effect of coming from impoverished families.[34] Thus, districts with children from AFDC families, whose standardized reading and math scores are lower than students from nonpoor families, do no one a favor if they hire their own graduates. A 1 percent increase in such employment will depress eleventh-grade reading and math scores by one tenth of one percent, while poverty, per se, reduces reading and math scores by just one-hundreth of 1 percent.

Conventional and Unconventional Reform Strategies

Teacher certification requirements are modest in Pennsylvania. As a result, there is a large pool of certified teachers from which districts make employment decisions, and that pool is highly variable in quality. The hiring process does little to ensure that those hired are the best teachers available. What can be done to improve teacher quality? Here are some conventional and unconventional reform strategies.

Conventional Reform Strategies

1. National Commission for Teaching and America's Future

In 1996, the National Commission on Teaching and America's Future recommended improving the quality of classroom instruction by shoring up the three-legged stool of teacher quality assurance — "teacher education program acceleration, initial teacher licensing, and advanced professional development."[35] Leg one would be strengthened by requiring that programs be accredited by the National Council for Acceleration of Teacher Education (NCATE). Leg two would be strengthened by requiring that beginning teachers meet the standards being established by the Interstate Teacher Assessment and Support Consortium (INTASC), based in turn on the work of the National Board for Professional Teaching Standards. Leg three, certification, involves utilizing the National Board's framework for assessing excellence in professional practice. Mainstream reform thus involves changes in program accreditation procedures and extensive use of a national master teacher certification.

Based on what we have seen in Pennsylvania, the reader may well harbor misgivings about this approach. The call for further accreditation by NCATE, for example, rings hollow. If one correlates by district any of the student achievement measures dis-

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cussed earlier against the percentage of each district's teacher force graduated from NCATE-certified institutions in Pennsylvania, one finds that the relationship is *inverse*. The percentage of students with post-secondary school plans actually falls as the fraction of teachers from NCATE-certified programs rises.[36]

Further, if one looks at the percentage of children testing below grade level, one finds that fraction growing with the fraction of a district's teacher force that graduated from NCATE-certified education programs in Pennsylvania. These empirical results are the *opposite* from what one would expect if NCATE approval were really a source of quality control for teacher preparation programs.[37]

The National Board for Professional Teaching Standards holds out the hope of using master teachers to observe and certify others so that states can begin to reward their outstanding instructors. Yet this approach has two fundamental problems: it is based on peer review and has not been validated in terms of student achievement.

The process is also expensive and time consuming. Today, the U.S. has some 3 million classroom teachers, and just a few thousand National Board-certified teachers. If one assumes that the number of National Board-certified teachers doubles each year, one finds that evaluating 3 million teachers will take at least eleven years. Moreover, most of the beneficial effects accrue in the latter part of that time period. At $2,000 per teacher, it would cost about $6 billion to evaluate the nation's classroom teachers. Meanwhile, at least one-third of them will have retired and been replaced.

Then there is the harsh reality of SAT scores. If teachers' scores continue to hover around the 35th percentile, then no amount of accreditation or subsequent professional development will succeed in convincing the other two-thirds of students about the reality of what the classroom teacher knows.

2. *Requiring College Majors for New Teachers*

A second type of mainstream teacher quality reform is to require that future teachers have true college majors in the areas in which they teach. As noted earlier, this is the reform over which Governor Ridge and the Pennsylvania Department of Education have been gridlocked with higher education for the past six months.

By requiring true majors in English, mathematics, etc., still within just four years of course work, schools of education will go through radical downsizing as their courses get traded for those taught in other departments. Not only will course credits decrease in schools of education, it is likely that enrollments will also drop sharply, since students who previously were able to avoid rigorous courses by taking education-school courses will no longer be able to get away with this. Some will simply choose not to go to college. Others will find that career opportunities resulting from the true college major are superior to those in the classroom. Finally, if minimum grade point averages, administered by departments outside schools of education, are imposed, as suggested in Pennsylvania, it is likely that applications will drop, and graduation rates along with them.

While I am mindful that this strategy is bitterly resisted by entrenched education departments and schools of education, it would solve a good part of the teacher quality problem by subjecting teachers to academic training in the fields they are going to teach. For this to be meaningful, however, state supervision of the definition of a college major needs to be imposed and actual student transcripts need to be randomly examined. Independent validation of subject knowledge can be accomplished by raising the passing Praxis scores, and insisting that they be validated in terms of pupil achievement.

3. Elimination of Initial Certification Requirements: New York's Trial Balloon

One of the most interesting teacher quality reforms being debated was New York's trial balloon to eliminate initial certification requirements entirely, and allow anyone who has a true college major in a subject area to apply for a teaching position and be allowed to teach. Two conditions were to be fulfilled: the prospective teacher would have to take some pedagogy and child development course work in the summer preceding the first year of teaching, and subsequently take additional, specified course work over the next several years to earn the equivalent of a Master of Arts in Teaching or MAT. At the institutional level, if at least 80 percent of students in a school of education do not pass the New York subject matter tests, then the school of education risked losing its program approval. This proposal was not adopted; one can speculate that schools of education fought it because it would have dried up their supply of applications (and therefore tuition income).

The ideas suggested are unconventional for an economist, because they rely at least initially on properly aligning the civic duties, responsibilities, and authority of school board members.

Another way to think about the New York trial balloon, or strengthening "alternative certification" mechanisms as it is called in other states, is to think about what sort of skills and knowledge a school district would obtain if it simply hired randomly from the pool of college graduates. Think of this approach as throwing a dart at the normal curve of SAT scores. On average, one would wind up hiring someone close to the mean SAT score, and not on the left side of the distribution at the 35th percentile as has been the case in Pennsylvania.[38]

Still, this approach to improving teacher quality fails to deal with the local hiring decision, and one can fairly observe that it would do nothing to address likely subject matter shortfalls of current teachers.

Unconventional Reform Strategies

To make a difference today and tomorrow in terms of the quality of classroom teachers in Pennsylvania (or any state) may require new kinds of thinking. The ideas suggested below are unconventional for an economist, because they rely at least initially on properly aligning the civic duties, responsibilities, and authority of school board members.

The first step in straightening out local civic authority is to recast the oath of office that school board members must take so that they publicly agree to high standards of ethical conduct: they must agree not to benefit financially, directly or indirectly, from the activities of the school district.

Today, few states clearly prohibit conflicts of interest in business dealings of board members with the district which they govern. For example, only eight of thirty states whose state laws we have examined preclude elected school board members from having direct business dealings with the district that they were elected to govern. Sixteen even permit an elected board member to vote on the offer of a job to a relative.[39]

Optimists may argue that such explicit regulation is unnecessary and accusatory. Let me reply by suggesting in business parlance that if one leaves "money on the table" why should we be surprised when someone picks it up? Lax ethical standards allow school board members, if they choose, "to take the money off the table" without regard to the effects on the education of children.[40]

Related to prohibiting self-dealing is the inclusion in school board and superintendent oaths of office that their purpose is to ensure that each student is to be educated to the full extent of his/her intellectual capabilities, and that it is their duty to keep the parents of schoolchildren completely informed of each student's academic progress.[41]

The rights and responsibilities of school board members and superintendents also need to be clarified. It is commonplace to hear board members complain that superintendents keep them in the dark about what is really going on, while superintendents routinely complain about board members meddling and micro-managing . Many superintendents seek to exploit asymmetric information relationships with their boards, and simply stonewall requests for information about curricula, student performance, costs, and so forth.

What to do with the inventory of current, typically tenured teachers while expecting stronger performance from their students?

Another aspect of improving the ethical conduct of board members is to require meaningful financial disclosure and reasonable compensation of school board members. The purpose of financial disclosure is to create a basis for auditing the promise not to engage in self-dealing. The purpose of compensation is to ensure that people get paid something akin to their opportunity costs. Something on the order of $7,500/year seems appropriate for the 400+ hours of time that school board members currently donate in Pennsylvania.

Dealing with the Teacher Inventory Problem: Parental Choice of Teachers

While many teachers will retire in the foreseeable future, others will remain in the classroom for a considerable period of time. What to do with the inventory of current, typically tenured teachers while expecting stronger performance from their students?

Hiring teachers for the wrong reasons is a primary explanation of why schools fail.

The first question is what do they know? Suggesting that tenured teachers be tested for their subject or content knowledge has so far found no takers among states pursuing education reform. Yet there are other ways to benchmark their content knowledge. One might, for example, begin with the presumption that every school district has a handful of nonproductive teachers. It seems likely, however, that while both school administrators and local union leaders know who those people are, the realities of the collective bargaining agreement and the unwillingness of school administrators to engage in conflict-ridden personnel procedures mean that these unsatisfactory teachers will remain in the classroom. Their continued presence not only adversely affects the students, but probably also demoralizes other teachers because they observe on a daily basis that nonperforming teachers get the same rewards as they do. One way to address this problem is simply to allow parents to choose who their children's teachers will be each year, rather than the current procedure of having school administrators assign students to teachers.[42]

At the extreme, "lemon" teachers will find themselves with few students. Since there is no prohibition in current collective-bargaining agreements against their getting paid even though they have no students to teach, and they are already budgeted for, the adverse effects on students in the classroom will be mitigated. This proposal has the additional advantage of being readily implemented by any superintendent and school board with gumption. It is not expensive. It is unlikely in all but the smallest districts that the diversion of students to other teachers will lead to much of an increase in classroom size since the number of "lemons" is small (I would guess under 5 percent of the teacher force), and the effect will be averaged across many other teachers.

As taxpayers become aware of a few teachers getting paid to not teach, pressure will grow over time on policymakers to solve this problem rather than allowing it to fester. Undoubtedly, some unproductive teachers will realize that they must improve in order to have students to teach, and will become effective enough to attract pupils.[43] Others may choose to retire.

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Compare this approach to dealing with the current teacher force with such notions as spending $2,000 per teacher on the National Board for Professional Teaching Standards evaluation scheme. Empowering parents has no direct monetary costs, and is likely to have immediate, discernible, and widespread effects on teachers' own investments in themselves. It seems unlikely that near-lemon teachers would willingly permit their own classroom enrollments to drop too small as parents moved their children to other teachers who have stronger academic/subject backgrounds and pedagogical skills. The prospect of newspaper or TV coverage of nearly empty classrooms would be a wake-up call to all but the most obdurate. The near-lemon group would begin to brush up on their skills and become more concerned with classroom learning than heretofore.

Teacher Reform and the Charter/Voucher Movement

Hiring teachers for the wrong reasons is a primary explanation of why schools fail. Indeed, if one looks closely at successful school turnarounds, they virtually always include selection of a new manager (principal), and the authority to change staff, i.e., undo previous bad personnel decisions. A close look at what charters and vouchers do when they really work indicates that they circumvent historically bad teacher personnel decisions. The charter/voucher strategy creates alternative sources of education services involving different people. Because these teachers are unlikely to be unionized, and are likely to be younger than conventional staff in a conventional public-school system, they will be less expensive. Whether or not they perform better depends on precisely the same issues discussed above, i.e., whether individuals have strong academic preparation and demonstrate superior pedagogical skills.

One way to influence the quality of teaching in these institutions is to allow them to hire teachers who are not traditionally certified. Fights over whether teachers at charter or voucher institutions are certified are really fights over whether or not children empowered with choice will be consigned to teachers from the low end of the SAT distribution, or from the middle or high end of the SAT distribution.

Allowing charter or voucher schools to hire noncertified teachers is not enough, however. If choice laws do not insist that such teachers have strong general and subject knowledge (which can be determined by requiring a college academic major or inspecting their test scores), it is easy to envisage further disappointment. Choice without significant information for parents and children about the academic qualifications of teachers may not lead to any significant change. Failing to improve the substantive knowledge of teachers, while claiming to create more competition and choice in education, will simply waste more time, resources, and squander energy and initiative that could be devoted to ensuring that children learn more.

The Larger Picture

It is commonplace now to question requests by public education for more money. A nationally watched school-funding equity case in Pennsylvania recently lost, to the shock and dismay of several hundred rural and urban school districts. While large variances in per pupil spending were demonstrated by the plaintiffs, they failed to provide a factual link between different spending levels and the provision of a thorough and efficient education. Disparities between curricula and teacher quality were not addressed.

As noted at the outset, common sense tells us that improving student performance depends on improving curricula, the quality of new teachers, strengthening what employed teachers know, and the quality of hiring decisions. In this paper, I have candidly reviewed what current law, regulation, and actual practice entail with respect to teacher preparation and selection. It is not a confidence–inspiring picture.

This review may also have also left the reader wondering how any reasonable person can say with a straight face that the problem of teacher quality will solve itself. It is beyond me that, faced with the facts, one could simply say that all will be well.

Devise a set of serious teacher standards, and bite the financial bullet to buy out the inventory of substandard teachers.

The astute reader may have noticed that, while I have exhaustively dealt with the nature of teacher supply and teacher hiring, I have not addressed whether it will be possible to induce the best academically qualified to *accept* K-12 teaching jobs.

Teacher salaries where I live are fairly high. The starting salary in the Pittsburgh Public Schools for nine months with a bachelor's degree is in excess of $34,000, and in some affluent suburbs close to $40,000. Rural and industrial districts offer far less, but one would be surprised how high *relative* salaries are, even if one compares nine-month to twelve-month salaries.

One also now sees the beginning of political competition among states and districts, as elected officials recognize that the public is upset over public education and wants better results. Most of the current crop of presidential hopefuls want to appear to be committed to education reform. It is perhaps imaginable within the next few years that, as facts of the sort developed above become accepted, the sensible solution to the problem will become politically acceptable: devise a set of serious teacher standards, and bite the financial bullet to buy out the inventory of substandard teachers. My conjecture is that the first governor who figures out how much it will cost, and can make a convincing case that the higher teacher standards and buyout costs are worth it, will be a political winner. I surmise that any movement towards serious teacher standards will produce a similar result for those who initiate it.

This chapter is based on a monograph prepared for the Pennsylvania State Board of Education in conjunction with its consideration in 1997-8 of Pennsylvania's laws and regulations governing teacher preparation. The complete monograph and appendices, released July, 1998, is available on the author's web page: *http://www.heinz.cmu.edu/~rs9f/*, or from ERIC Clearinghouse Number TM029186.

[1] Kerry A. White, "Education Takes Center Stage in Mass. Race," *Education Week*, 7 October 1998.

[2] See, for example, Anthony E. Boardman, Otto A. Davis, and Peggy R. Sanday, "A Simultaneous Equations Model of the Educational Process," *Journal of Public Economics* 7 (1977): 23-49; Ronald Ferguson, "Paying for Public Education: New Evidence on How and Why Money Matters," *Harvard Journal of Legislation* 28, no.2 (Summer 1991): 465-98; Ronald Ferguson and Helen F. Ladd, "How and Why Money Matters: An Analysis of Alabama Schools" in Helen F. Ladd, ed., *Holding Schools Accountable* (Washington, DC: Brookings Institution, 1996), 265-299; David H. Monk and Jennifer A. King, "Multilevel Teacher Resource Effects on Pupil Performance in Secondary Mathematics and Science: The Case of Teacher Subject-Matter Preparation" in Ronald Ehrenberg (ed.) *Choices and Consequences: Contemporary Policy Issues in Education* (Cornell University: ILR Press, 1995); Robert P. Strauss and Elizabeth A. Sawyer,"Some New Evidence on Teacher and Student Competency," *Economics of Education Review*,"5, no. 1 (1986): 41-48.

[3] Another distinction between myself and educational researchers and policy makers who emphasize pedagogy, as contrasted with subject knowledge, is my strong preference for defining and measuring effective pedagogy in terms of student learning rather than another teacher's approval of either the teacher's displayed pedagogical knowledge or displayed pedagogy in the classroom.

[4] Institutional arrangements differ in other states but the line of authority from the legislature to schools is typically strong.

[5] Willard S. Elsbee, *The American Teacher: Evolution of a Profession in a Democracy*, (New York: American Book Company,1939), 337.

[6] The reader should be aware that Pennsylvania is in the midst of substantially revising its program approval standards. The text describes what has been in place through May 1999. Pending changes would impose either grade point admissions requirements (3.0 GPA out of 4.0 after a phase-in period), or Praxis I Pre-professional Skills Test scores of 178 in math and 174 in reading. Other pending amendments substantially raise the course requirements for a prospective teacher by obligating teacher preparation programs to require the same general and disciplinary course work as for a Bachelor of Arts or Bachelor of Science degree. Thus, a prospective biology teacher would be required, should the amendments be adopted as proposed, to take the same courses as a biology major.

[7] See Lori Bowes and Mindy Marks, "Teacher Preparation and Program Approval in Other States" in Robert P. Strauss et. al, *Teacher Preparation and Selection in Pennsylvania* (Harrisburg, Pa.: Pennsylvania State Board of Education, July1998).

[8] No suggestions are given as to what these policies are to be nor are any minimum requirements set.

[9] In April 1999, Governor Tom Ridge and Secretary of Education Eugene Hickok announced that they would be establishing a new, experimental alternative route program for Pennsylvania, but it is unclear how much of an impact this program will have.

[10] There have been recent proposals to add requirements in Pennsylvania but they have not yet been approved.

[11] As we shall see, when we convert the passing scores into the fraction of correct answers on questions of average difficulty, we find that teachers are often asked to demonstrate that they know less than half of what is on the standardized examinations in order to earn a teaching certificate. It should, however, be noted that the passing scores for Pennsylvania are scheduled to be raised in September 1999.

[12] See John H. Bishop, "Signaling, Incentives, and School Organization in France, the Netherlands, Britain, and the United States" in Eric Hanushek and Dale W. Jorgenson, eds., *Improving America's Schools: The Role of Incentives* (Washington, D.C.: National Academy Press,1996).

[13] The skeptical reader should know that this interpretation of leeway and how it is used to solve "local" problems was verified with several Pennsylvania school superintendents and personnel directors who were happy to give me their answers in private.

[14] It is hard to understand how a state official in Lansing can know with certainty that failure to grant a request for an emergency certificate will work to the educational detriment of a student in Kalamazoo. However, Pennsylvania school officials have observed privately to me that the Michigan waiver test would cut down on the quantity of nonsense they have to deal with.

[15] Most states require 180 days of attendance of five hours of teacher contact. Over time, in-service days have been negotiated by individual districts to count towards this contact requirement.

[16] Some observe that those women now retiring are among the brightest and best trained of Pennsylvania teachers because they entered the teaching profession when this was one of the few professions open to educated women. As a result of affirmative action statutes, regulations and court cases, educated women today find many more avenues open to them. The absence of occupational segregation explains to some why there has been a long-term decline in the quality of public school teachers despite the significant progress made in raising their absolute and relative salaries.

[17] Robert P. Strauss, et. al *Teacher Preparation and Selection in Pennsylvania*, Table 5.7

[18] Ibid, Table 5.15

[19] The state could simply stop subsidizing elementary education majors, for instance.

[20] The key question from a public vantage point is why taxpayer subsidy should accompany the production of so many teachers who do not get jobs. The continued overproduction of elementary-school teachers is a case in

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point. Like most states, Pennsylvania's student body will be increasingly concentrated in the secondary grades, yet elementary education continues to be the focal point of most teacher preparation programs.

[21] Note that Pennsylvania does not require prospective teachers to pass a Core Battery Test in math, although most other states do.

[22] Strauss, et. al, *Teacher Preparation and Selection in Pennsylvania Schools.*

[23] A positive correlation indicates that actual hiring tends to be greater from approved programs with higher NTE mathematics scores, and a negative correlation indicates that actual hiring tends to be greater from approved programs with *lower* median scores. The employment rate was measured by taking—by NTE subject area and certifying institution—the ratio of certificate aspirants with a known NTE score ever employed in a Pennsylvania school district or intermediate unit to the total number of certificate aspirants with known NTE score. See Strauss, et. al, *Teacher Preparation and Selection in Pennsylvania*, Tables 7.8-7.11 and 7.12.

[24] To be sure, one can also argue that the economic opportunities for chemists are greater outside teaching, so that districts were unable to find chemistry teachers except from programs which had very weak results. On the other hand, these data also show the effects of artificially limiting supply by insisting that would-be chemistry teachers be immersed in teaching methods courses, the core activities of many education schools, to the exclusion of taking actual chemistry courses. In any event, the data show that programs with weak chemistry teachers got more of them hired in Pennsylvania school districts than those with strong chemistry teachers.

[25] Robert P. Strauss, *Who Should Teach in Pennsylvania's Public Schools?* (Carnegie-Mellon University, Center for Public Financial Management, 1993): Table 5.2.

[26] See Strauss, et. al,*Teacher Preparation and Selection in Pennsylvania*, Table 7.14. This may explain why researchers have such difficulty demonstrating that higher spending is associated with greater student achievement: undisciplined hiring practices lead to highly variable student achievement results. I encourage the reader to look carefully at Table 6 and wonder along with me why advocates for school finance equity have not focused on these types of results rather than just on per-pupil spending.

[27] Only Philadelphia and Pittsburgh may impose residency requirements for teachers and school administrators; all other districts are prohibited from doing so.

[28] This stark weakening in the oath of office occurred at a time when Pennsylvania was consolidating its 2,500 school districts into 501, and eliminated oversight by County School Superintendents. The reader may find as undue my emphasis on the "civics" aspects of school governance. However, in the absence of strong ethical requirements against self-dealing it is difficult to envision why volunteer school board members, who typically devote in excess of 400 hours per year to these enterprises, would not get tempted to appropriate privileges to compensate them for their efforts, let alone not take advantage of the huge opportunities to take what resources are on the table without violation of law.

[29] Alternatively, districts may actively "trade" jobs with each other.

[30] Several superintendents and a member of the Pennsylvania State Board of Education helped devise the questions in the questionnaire, some of which sought to elicit procedures, practices, and emphases in the hiring process which are consistent with nepotism models of teacher hiring.

[31] This result compares favorably with William W. Cooley and Carol A. George, *Educational Indicators for Pennsylvania*, University of Pittsburgh, Learning Research Development Center, *Pennsylvania Educational Policy Studies* Policy Paper No. 14,1995.

[32] Dale Ballou and Michael Podgursky, *Teacher Pay and Teacher Quality*, (Kalamazoo: W. E. Upjohn Institute for Employment Research, 1997).

[33] See Table 13 in Robert P. Strauss, Lori L. Bowes, Mindy S. Marks, and Mark R. Plesko, "Improving Teacher Preparation and Selection: Lessons from the Pennsylvania Experience, *Economics of Education Review*, forthcoming.

[34] Ibid.

[35] National Commission on Teaching and America's Future, *What Matters Most: Teaching for America's Future* (Washington, D.C., Author, 1996), 29.

[36] To be more precise, the Pearson correlation coefficient between the fraction of high-school seniors in 1990 with post-secondary school plans and the fraction of teachers from NCATE-certified education programs in Pennsylvania was -.36 and the odds of this being due to chance were 0.0001.

[37] The NCATE-approved programs in Pennsylvania are basically the former normal schools which do not attract the best undergraduates. For many districts, the NCATE programs produce the most teachers and certificates, so it is easy for a district to find someone with a teaching certificate. In some parts of the state, they are the only producers of teachers. So, if a district does not advertise and look around aggressively, it will wind up taking what is nearby.

[38] On this point, see Hanushek and Pace, "Understanding Entry into the Teaching Profession" in Ronald Ehrenberg, ed., *Choices and Consequences: Contemporary Policy Issues in Education.*

[39] See Ruth Kolb and Robert P. Strauss, "A Survey of State Laws Governing School Board Ethics," paper presented at the American Education Finance Association Annual Research Conference, Seattle, Washington, 19 March 1999 [Heinz Working Paper 99-8].

[40] Lack of state fiduciary oversight also enables those who initially handle local monies or contracts to add to their well-being. It is said in the publishing business that 5 percent is the usual "thank you" for having selected a particular textbook.

[41] Remarkably, if one reads the Pennsylvania School Code, one finds very little reference to parents of school children, let alone their being stakeholders in the successful education of their children.

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[42] For incentives to work properly, the children must face independent high-stakes testing so they do not simply choose the easiest graders or most popular teachers. Given rising academic standards in most states, this seems increasingly likely.

[43] After presenting this idea at the October 28, 1997 New York Board of Regents Symposium on Incentives to Achieve Higher Standards in Albany, New York, and a few public exchanges with the President of the New York Federation of Teachers, I was informed by one of the regional education managers (a BOCES superintendent) in upstate New York that the practice of formerly allowing parents to choose the teachers has worked well in Northern Minnesota along predicted lines. This is not that novel an idea, and in a sense merely ratifies what many aggressive parents insist on when they individually complain to local principals. To the market oriented who are not persuaded, the obvious question is why allowing choice among buildings (charter or voucher) is sensible, but choice *within* the building is not.

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Raising the Bar for Pennsylvania's Teachers

Eugene W. Hickok and Michael B. Poliakoff

Pennsylvania's teacher preparation system has long been focused on seat-time in education courses. Governor Tom Ridge's "Teachers for the 21st Century" initiative would revolutionize this system by reshaping traditional teacher education programs and by expanding alternative certification opportunities. This initiative raises the bar for prospective teachers in the Commonwealth: they must now meet higher admissions standards for preparation programs, take more academic courses and fewer education courses, and pass licensure exams with higher scores. College graduates who are academically distinguished and pass the appropriate licensure examinations may teach under the mentorship of a principal or master teacher without attending a school of education. The initiative also requires professional development focused on subject-related coursework. In these ways, Pennsylvania is taking a big step toward ensuring that all of its children have excellent teachers.

Pennsylvania's ninety-one teacher education programs produce nearly 12,000 new teachers every year. Every one of the Commonwealth's nineteen publicly supported universities has a teacher education program. The state has now also made a strong commitment to its new alternative certification program, which is designed to bring individuals with high academic qualifications to the public schools without requiring them to seek formal training in education, a program that may, at first glance, seem dismissive of teacher preparation programs. Yet Pennsylvania continues to see a role for colleges of education in the preparation of new teachers, if they can ensure that their programs produce candidates who are academically qualified to teach their subjects. For this reason, Governor Tom Ridge's *Teachers for the 21st Century* program includes both alternative certification and the reform of traditional teacher education programs.

Pennsylvania's *Teachers for the 21st Century* initiative focuses on clear, measurable, and rigorous guidelines and standards for men and women preparing to be teachers. When fully implemented, it will ensure that certification signifies the high academic proficiency that is essential for successful teaching. It will also establish continuous education requirements for teachers that will help them maintain their proficiency in the academic areas they teach.

Pennsylvania's Teachers for the 21st Century initiative focuses on clear, measurable, and rigorous guidelines and standards for men and women preparing to be teachers.

There was, and remains, much to fix. What we had was a teacher preparation and licensure system that was focused on seat-time and inputs, a system that had many course requirements but could give only limited assurance of competence and quality. There were seven areas of urgent concern.

1. Few teacher education programs had meaningful admissions standards. Most programs set their admission requirement—if they had one at all—at a 2.5 grade point average. In other words, the doors were open for C+ (or worse) students to become teachers. In addition, that C+ could represent any courses - including the most notoriously lax classes in our higher education system.
2. Grading standards in teacher education programs were extremely low. At one public university, 78 percent of students who took "Curriculum and Foundations" courses received "A" grades. But on that same campus, only 18 percent of the students who took English courses or Physics courses received "A's." Indeed, throughout our State System of Higher Education, which produces over half the new teachers in the Commonwealth, we found:

   - The average grade in an education course is 3.3.
   - The average grade in a humanities course is 2.83.
   - The average grade in a mathematics course is 2.30.
   - The average grade in a natural science course is 2.49.

   A National Center for Education Statistics study confirmed that grade inflation has been far more pronounced in education courses than in other areas of higher education. The data revealed that in the United States the average grade in an education course was 3.41, compared to 2.96 in social sciences and 2.67 in science and engineering courses. We found, moreover, that many teacher preparation programs were increasing the credit-hour requirements in education courses at the expense of strong preparation in academic content areas.
3. Students preparing to be high-school teachers were not required to take the same academic content area courses that their peers who majored in those areas had to complete. Academic capstone experiences and senior projects were often casualties of this weakened education major. While math majors, for example, had to complete differential equations and advanced calculus, at some campuses students preparing to teach high school mathematics—including Advanced Placement courses—could substitute a "history of mathematics" course for these rigorous and challenging experiences in the academic discipline itself.

4. Many teacher certification programs had no meaningful standards by which to measure knowledge and skills in the academic content areas their candidates intended to teach.

5. Qualifying scores on the National Teachers or Praxis exams were set at absurdly low levels. Although the questions are carefully designed to be at a level of difficulty appropriate for a minimally qualified, entry level teacher, Pennsylvania, like most other states, allowed candidates for certification to score in the bottom 10 percent on many of these tests and still receive licensure. Thus, candidates with significant knowledge gaps were finding their way into tenured teaching positions in the public school system.

6. There was no vehicle for alternative certification. A highly successful teacher at a private school, community college, or university could not legally teach in a public school without taking a large battery of education courses.

7. There was no requirement for the professional development of veteran teachers.

In short, Pennsylvania's system allowed students with a C+ (or lower) GPA to enter colleges of education and also certified them as teachers with the equivalent of an "F" on their licensure exam. An A+ graduate in mathematics from Carnegie-Mellon could not teach in the public schools without certification, but a graduate of a teacher education program who scored in the bottom 20 percent on the Praxis math exam for secondary teachers would be fully licensed.

Many teacher certification programs had no meaningful standards by which to measure knowledge and skills in the academic content areas their candidates intended to teach.

A few years ago the Holmes Group, a consortium of eminent American educators, articulated a vision they called Tomorrow's Schools of Education. They stated:

> Competence in subject matter requires that education students experience first-rate learning in the liberal arts....Prospective educators taking a content course in English or chemistry or mathematics should sit alongside liberal arts majors even at advanced stages. Education credentials should not be printed with shoddy ink. Tomorrow's Schools of Education will therefore refuse to admit or recommend for a teaching license any student whose studies in the arts and sciences have been diluted in any way whatsoever.

We expect that the *Teachers for the 21st Century* initiative which Governor Tom Ridge introduced in December 1997, which the State Board of Education approved unanimously in March 1998, and which is now in the final stage prior to adoption, will bring the dream of Tomorrow's Schools of Education closer to reality. Pennsylvania's reforms emphasize that the teacher must model academic excellence: only a teacher who has walked the walk of academic achievement can successfully lead students to achieve. In order to receive state approval, a college of education will have to abide by standards in three critical areas.

ADMISSIONS: Beginning in 1999-2000, Pennsylvania will require that candidates for teacher training programs complete at least three semesters of college level, liberal arts courses and attain a B grade point average in order to be admitted to a teacher training program. Recognizing that there will always be students of high promise who develop late, our standards allow the institution to enroll up to 10 percent of the candidates who do not meet this GPA, if exceptional circumstances justify admission. Moreover, candidates who do not attain the required GPA have the option to work hard for another semester or more to meet the academic challenge of this requirement. Just as pre-medical students often take an extra semester or year of science courses to meet the rigorous admission requirements of medical school, those aspiring to a profession as crucial as teaching should strive for and attain high standards of academic excellence.

This 3.0 requirement is to be based on college course work *exclusive of education courses*. As we examined the problem of grade inflation, we determined that colleges and universities would be more likely to maintain rigorous standards for their education students, as long as the entrance requirements are grounded in the arts and sciences that are the core of all further study.

The new standards require prospective high-school teachers to fulfill the same course requirements as their classmates seeking a B.A. or B.S. major in a particular academic discipline.

CURRICULAR REQUIREMENTS: The new standards require prospective high-school teachers to fulfill the same course requirements as their classmates seeking a B.A. or B.S. major in a particular academic discipline. This has always been a best practice in preparing teachers, since it requires them to develop a serious scholarly commitment and expertise in the subjects they will teach. A science teacher, for example, who has personally conducted research and experiments and who has personally experienced the process of scientific inquiry will be able to guide students to creative and innovative work in science and technology. No amount of training in teaching methodology can substitute for real intellectual maturation in an academic area. Finally, the prospective teacher must maintain a minimum 3.0 GPA in the subject area he or she intends to teach. A teacher with weak academic skills cannot help students meet the demands of the next century.

TEACHING EXPERIENCE: The new standards require that education students have field experiences in teaching at the very beginning of their training. Thus they will discover at the outset whether they have the commitment and temperament necessary for effective teaching and can begin to integrate academic experiences with their application to the classrooms they will one day lead.

We have, finally, required that colleges of education ensure that their curriculum in pedagogy is efficient and avoids duplication. A full teacher preparation program, with a complete major in an academic content area, must be designed—like any other college degree—to be completed in four years. A proliferation of course requirements in educational methodology may be good for the job security of professors, but it is an unethical misuse of taxpayers' funds and student tuition.

In addition, the *Teachers for the 21st Century* initiative includes more rigorous licensure testing, professional development, and alternative certification:

RAISING QUALIFYING SCORES: We have already begun to raise the minimum qualifying scores on the National Teachers or Praxis exams from the bottom quintile or decile to scores that approach the national average. All prospective teachers must pass these exams in order to be licensed to teach in public schools. We will raise the bar gradually, giving prospective teachers time to prepare for these higher standards, but we will move it steadily upwards. Before 1997, candidates could pass the Professional Knowledge Test with a score in the 5th percentile; now the passing score (167) represents the 27th percentile. On the Elementary Education exam, we moved to the highest qualifying score in the nation (168), but we will not stop there. On the Biology Exam (Part I), we moved our cut score up 12 points (156). We are still not where we wish to be, but no longer will candidates who miss half or more of the questions be granted licensure.

ALTERNATIVE CERTIFICATION: One size does not fit all in the preparation of teachers. We have promulgated guidelines by which those who have completed their undergraduate or graduate education with academic distinction and have passed the same licensure examinations (including the subject specialty exam) that other prospective teachers take, are allowed to find employment in a one-year teaching apprenticeship program at an eligible public school. These alternative certification candidates receive the same salary as other beginning teachers and teach independently with the guidance of a participating principal or master teacher as a mentor. Other states have found that this type of program enhances their teaching force by allowing uniquely qualified individuals to contribute to their public-school systems; some studies even show that teachers who gained alternative certification were more skilled than their traditionally licensed counterparts. Although detractors claim that such programs are doors through which unqualified persons enter the profession, research shows that they are windows of opportunity for those with special expertise and commitment to improve the school system. Students at expensive private schools have always had the benefit of subject area specialists who are passionately devoted to their subjects with or without traditional state certification; the alternative certification process will make it possible for such individuals to move efficiently into the public-school system and give all students the

We will not reach the goal of placing a qualified teacher in every classroom by pretending that quality does not matter.

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benefit of their expertise. Response to the program from school superintendents and potential candidates has been extremely strong: we anticipate a steady stream of excellent new teachers from this program.

PROFESSIONAL DEVELOPMENT: Working with the General Assembly, we are seeking a requirement of a minimum of 9 semester hours or the equivalent of subject-related course work for all teachers every five years. This will be a statutory requirement for licensure, and each school district will be responsible for creating a broad-based committee of educators, parents, and business leaders to oversee the development of meaningful professional development plans. We have developed our own examples of professional development programs that focus on academic content. Now in their second year, the Governor's Institutes for Educators and the Governor's Academies for Urban Educators offer week-long, intensive course work that upgrades teachers' knowledge of what they teach. In administering our Federal Eisenhower Grants for Mathematics and Science Educators, we also require that the programs administer a pre- and post- test to demonstrate the value added to the participating teachers' mathematics and science skills.

Pennsylvania thus rejects the National Education Association's objective of making licensure "a process controlled by the profession." It is clear that the profession was doing little to ensure that new teachers had the knowledge base they needed and quite a lot to ensure that colleges of education expanded their prerogatives over the preparation of public-school teachers. The voices of employers, parents, and others who see the end result of education—student learning—are a crucial corrective to the voice of teaching unions and associations.

Critics may object that states which—unlike Pennsylvania—have teacher shortages would experience a staffing crisis were they to apply such standards. We reject this argument. We will not reach the goal of placing a qualified teacher in every classroom by pretending that quality does not matter. Rather than recruiting the mediocre by lowering standards, states need to make teaching in the public schools a prestigious career open to only the best qualified. We anticipate, moreover, significant reinforcement of the teaching force through alternative certification and look forward with great optimism to the contribution that professionals with special subject area expertise will bring to our classrooms.

Pennsylvania's new standards require objective criteria for admission, curriculum, and academic achievement. Our colleges of education will need to work hard to meet these new standards, and we have advised our deans of education that accreditation is no guarantee that state approval will be forthcoming. But we are firmly convinced that the dynamic new teachers who will emerge from these programs will justify this effort, and we will see the result of excellent teaching in higher levels of student achievement. For that, after all, is the reason schools exist.

Traditional and Alternative Certification: A View from the Trenches

Naomi Schaefer

The stated purpose of state teacher certification and state approval of teacher education programs is to ensure that every public school child is taught by a qualified instructor. A close look at what these programs entail, however, suggests that they do not reliably accomplish this goal. Case studies of what it takes to become a teacher in California, Ohio, New York, and Minnesota reveal that approved preparation programs tend to have very low entry requirements, no exit requirements, scant subject content, and a surfeit of pedagogical courses of uncertain value. While the requirements are flimsy, they are also numerous. Hence the time and money required to complete such programs probably discourages outstanding candidates from entering teaching. Alternative certification programs have promise, but today they are spotty—some states have none—and uneven in their requirements. States should consider creating more alternate routes to certification and should ensure that these programs do not pose so many obstacles as to undermine their usefulness.

Introduction

It has often been noted that two million of the nation's teachers will be eligible for retirement in the next five to ten years. That means a very large number of new teachers must be hired. While this problem could easily become a crisis, it can also be seen as a tremendous opportunity to take a second look at the way public-school teachers are trained and certified.

State systems of teacher certification were put into place to ensure that every teacher would be qualified to teach, but a close look at the way these systems work in practice reveals that they do little to accomplish this goal. In most states, people receive a license to teach only upon successful completion of a teacher-training program, normally housed at a school of education, which has been approved by the state and accredited by national organizations of educators. This report suggests that teaching candidates generally enter training programs which have very low entry requirements, no exit requirements, scant subject matter content, and many pedagogical courses of dubious value. While the requirements themselves are flimsy, the time and money needed to complete the requirements likely discourage many outstanding candidates from pursuing teaching as a career.

Today there are two competing sets of ideas about how teachers should be prepared and hired. One model—which predominates today—holds that states need to ensure that prospective teachers graduate from high-quality preparation programs. Professional educators set the criteria for what makes a training program adequate and school districts can hire only from among graduates of these programs. This model has been criticized by researchers who argue that effective teachers—teachers who boost student achievement—are more likely to be people who score well on standard measures of verbal ability (SATs, for instance) and who have solid knowledge of the subject they teach, not those who have received a lot of training in schools of education. Members of this camp argue that states must make it easier for talented college graduates to enter teaching without having to spend years in traditional training programs.

Teaching candidates generally enter training programs which have very low entry requirements, no exit requirements, scant subject matter content, and many pedagogical courses of dubious value.

This paper takes a close look at the preparation of a traditional teaching candidate (several candidates, actually) and compares this candidate with one who pursues an alternate route to the classroom. The comparison focuses on two questions: (1) how good is the preparation of the traditional candidate? and (2) how great an obstacle does the alternate route present to a candidate who some would already consider ready to teach? Certification programs in four states are described in detail. First, traditional certification programs for high-school teachers in California and Ohio are examined. Next, alternative certification options for high-school teachers in those two states as well as New York are described. Finally, teacher certification options for elementary education in Minnesota are reviewed. These case studies are followed by a chart showing the traditional and alternative paths to certification in these states and two others.

Certification for High School Teachers: How It Works in California

Becoming a public school teacher in California normally means entering a traditional teacher education program after completing a bachelor's degree. Unlike some states, California has not had many programs in recent times that allow students to gain certification while earning a B.A. (the results of a conscious decision to scrap the undergraduate education major). Today, California State University at Sacramento (CSUS) has one of the largest teacher education programs in the state. Let's examine its admissions prerequisites, education curriculum, and student-teaching requirements for a candidate seeking to get certified as a high-school biology teacher.

One education department chairman described the test as follows: "Can you read, write, add, and subtract? Good. You'll pass."

Admission to the program requires three things: graduation from college with a specified GPA; a passing score on a test of basic reading, writing, and math skills; and either a major or minor in biology or a passing score on a biology test.

An applicant first must submit transcripts that demonstrate a GPA of at least 2.75, a modest standard in an age of collegiate grade inflation. The application also includes a statement of moral character as well as a list of experiences related to teaching and a statement of professional goals. CSUS also requires a group interview lasting one hour.

All candidates for the program must take a basic skills test—the California Basic Educational Skills Test (CBEST), which has reading, writing, and math sections. The test is said to be pegged to an eleventh grade level. One education department chairman described the test as follows: "Can you read, write, add, and subtract? Good. You'll pass." Several sample questions are included below to give a sense of the test's difficulty. Statistics on the passing rates of this test are unavailable because the state is currently in litigation over it.

The CBEST reading section is supposed to "assess your ability to comprehend information presented in written passages, tables and graphs." This section is divided between critical analysis and evaluation, and comprehension and research skills. It tests such things as whether the candidate can distinguish between fact and opinion, make logical inferences based on a passage, recognize the intended audience of a given passage, etc. The writing section consists of two essay topics designed to give you the opportunity to demonstrate your ability to write effectively. The math section is divided into three parts: estimation, measurement, and statistical principles; computation and problem solving; and numerical and graphic relationships.

Samples from the California Basic Educational Skills exam:

Example:

______most people know that film must be developed into negatives before making photographs, few are familiar with the process. In black-and-white photography, film is removed from the canister in a darkroom and placed in a special light-resistant developing tank. When the film is safely in the tank, it is safe to turn on the lights and begin the developing process. Many of the same basic procedures are used to develop color film. The first step is to add a chemical "developer" that brings out the images on the film's photosensitive surface. The developer is later poured out and replaced with a liquid "stop bath"—an acetic acid solution that prevents any further reaction between the film and the developer. After the stop bath is poured off, a fixing bath is added, at which point the film can be exposed to light without being damaged. The fixing bath is then poured off, the developing tank opened, and the film washed to remove any chemical residue. _____, the negatives are dried in a dust-free location.

Which words or phrases, if inserted in order into the blanks in the passage would help the reader understand the sequence of the writer's ideas?

A. Even if; However
B. Since; Consequently
C. Although; Finally
D. Because; Meanwhile
E. While; As a result

According to information presented in the passage, what should one do immediately after placing film in the developing tank?

A. Add a chemical developer
B. Check the images on the film's surface
C. Turn off the lights
D. Place the tank in a dust-free location
E. Add a liquid stop bath

Sample math question:

Tara can develop 2 rolls of film in about 18 minutes. At this rate, how long will it take her to develop 8 rolls of film?

A. 42 minutes
B. 1 hour 12 minutes
C. 1 hour 20 minutes
D. 1 hour 44 minutes
E. 2 hours 24 minutes

Sample essay question:

Ernest Hemingway once commented, "As you get older, it is harder to have heroes, but it is sort of necessary." To what extent do you agree or disagree with this observation? Support your opinion with specific examples.

> ***What these admissions standards appear to do is to ensure that a completely ignorant person cannot enter a teacher education program, but they do not ensure that all teacher candidates are well-educated.***

High-school teaching candidates in California should have an undergraduate degree (major or minor) in the subject they want to teach—biology in this case. But they can bypass this requirement by taking the Praxis Series test for biology, which includes the Single Subject Assessment Test (SSAT) for Biology.

the General Science SSAT, the Praxis II Biology Content essays, and the General Science Content Essays.

The SSAT Biology and Life Sciences exam contains a multiple choice section and two essay sections. A passing score for the Biology and General Science multiple choice section is 680 on a scale of 250-990. For the Biology Content Essays, a passing score is 157 on a scale from 100 to 200. For the General Science Content Essays, a passing score is 150 on a scale from 100 to 200.

The topics covered by these tests include basic principles of science; molecular and cellular biology; diversity of life, plants, and animals; classical genetics and evolution; ecology; and science, technology, and society.

Here are some sample questions from the Praxis series exams for biology and general science:

> The highest blood pressure in the human circulatory system is found in which of the following?
>
> A. Arteries
>
> B. Arterioles
>
> C. Veins
>
> D. Venules
>
> The diversity of finches in the Galapagos Islands is an example of which of the following?
>
> A. Adaptive radiation
>
> B. Seasonal isolation
>
> C. Mechanical isolation
>
> D. Selective hybrid elimination
>
> *Here is an example of a sample essay question:*
>
> Darwin proposed that the mechanism of evolution was natural selection acting on heritable variation within a population. Darwin, however, could not account for these sources of variation. How do the principles of genetics account for this variation?

Requiring that teaching candidates demonstrate basic academic skills is not unreasonable, but the usefulness of a simple test with a low cutoff score can be questioned. This test does not inspire much confidence in the system's ability to ensure that all teachers are knowledgeable. Allowing a minor in biology to count as sufficient subject-level preparation would also seem to be a low standard. What these admissions standards appear to do is to ensure that a completely ignorant person cannot enter a teacher education program, but they do not ensure that all teacher candidates are well-educated.

Curriculum

CSUS offers the option of a two- or three-semester program. Most students choose the two-semester program, which requires a full-time commitment. In the first semester, a student seeking to become a high-school biology teacher is required to take the following classes, as described in the CSUS course catalog:

- Multicultural Education for a Pluralistic Society: An examination of the nature of the sociopolitical relationship between California's public schools and the state's major cultural groups. Cultural dimensions, including language, history, gender, education and achievement are considered.
- Education Psychology: Emphases are given primarily to cognitive, developmental and social-psychological theories and data which contribute to the systematic investigation and application of effective teaching, learning, assessment, environmental management and motivational skills needed by teachers and learners. Individual differences and needs are stressed. A variety of classroom teaching strategies are used as models. Media and classroom dialogue are the basic instructional tools.
- Secondary School Teaching Methods: Orientation to student teaching; teaching strategies, legal guidelines and planning procedures (including unit and lesson plan development), curricular organization and activity programs; classroom management; micro-teaching and self-evaluation.
- Teaching Methods for Science: Techniques of presentation and methods of evaluation of secondary school science; should be articulated with student teaching. Activities include discussions, presentations and demonstrations.

The strength of the teacher licensing program in California would seem to be the way students are gradually introduced into the classroom.

During the second phase of the program (the second semester of the two-semester program), students take only two more classes. One is a seminar on "classroom concerns," in which the role of the student teacher in the secondary school is the primary focus. Particular attention is paid to the discussion of problems and issues facing credential candidates during their final steps in preparing for teaching.

The other class is "Teaching Reading in the Secondary School," which stresses "teaching reading in the junior and senior high schools; techniques for the improvement of word recognition skills, vocabulary, study skills and comprehension in subject matter areas; informal means of classroom organization for reading improvement. Discussion and participation in such classroom activities as panel discussions, presentations and demonstrations."

What is remarkable about these six required courses is that only one of them has anything to do with science. It is not clear why understanding California's major cultural groups and being able to teach high-school students to read would be considered crucial for a biology teacher.

Classroom Teaching

At CSUS, student teaching begins simultaneously with the start of classes. In the first month, students observe classroom teaching in several situations and grade levels. During the remainder of the semester, they participate as student teachers, serving as classroom assistants in at least one classroom. There are also visits to community agencies that serve the school population.

During the second phase of the program, participants do more intensive student teaching: five days a week for four hours a day. Most beginning teachers claim they are completely overwhelmed in their first year of teaching and starting with a half day may be helpful. The state of California is also working to help overwhelmed first-year teachers by giving them a mentor for their first two years on the job.

Once these two phases of the program are complete, the candidate must receive a recommendation from CSUS. No set standards dictate whether this recommendation is given. As in the case of college admissions, different factors are weighed: GPA, classroom performance, etc. My impression, though no administrator would say this, is that few people who complete the program fail to be recommended for certification.

The strength of the teacher licensing program in California would seem to be the way students are gradually introduced into the classroom. The weakness is in how little else the program does to ensure that they are qualified to teach. There are no exit requirements that would serve a quality control function. Once a student has met the minimal requirements for entry into a program, all he or she must do is pass some classes (of doubtful worth and difficulty). Given the reality of grade inflation, it is hard to imagine that many candidates fail to graduate. Note, too, that no aspect of the program strengthens the candidate's subject matter knowledge.

Certification of High-School Teachers in Ohio

The basic requirements for teacher certification do not vary greatly across states, so the steps for becoming a teacher in Ohio are similar to those in California. After completing the bachelors degree, the candidate must go on to get a masters in education. This requirement is new for Ohio; before 1999, applicants could become certified while earning their bachelors degree.

Admission requirements in Ohio involve the same three elements as in California: demonstrating basic reading, writing and math skills, having a B.A. with a certain GPA, and demonstrating subject matter knowledge. To gain admission to the teacher education program at Ohio State University's School of Education, a candidate must have majored in the subject that he or she wishes to teach. There are no exceptions and no test-based alternative.

To enter the OSU program in biology, a candidate must have thirty-nine semester hours of science, including twenty-three in the biological sciences. These should include the following subjects: Energy Transfer and Development; Form, Function, and Diversity; Ecology; Evolution; Animal Diversity; General Plant Biology; General Genetics; Basic Microbiology; Intro to Bio-Chemistry; and an upper level course in taxonomy or systematics (classification of organisms). Students must also take or have taken the following courses (which can be completed while they are working on the masters degree): Physical Geology; Historical Geology; General Chemistry (two courses); Organic Chemistry; Mechanics and Heat; and Electricity, Magnetism, and Light. Ohio seems to be making a serious effort to ensure that its teachers know their subjects, though it is unclear whether a good test of their knowledge might serve the same purpose.

OSU requires a GPA of 3.0 in all undergraduate classes, which is slightly higher than other education schools studied in this report. (Typically, the GPA requirements range from 2.5 to 2.8.)

Students can demonstrate competence in reading comprehension in one of three ways: passing Advanced Placement English test (taken at the end of high school), obtaining a Pre-Professional Skills Test reading score of 171 and writing score of 169 (on a scale from 150 to 190), OR getting a grade of B in an English Composition class. To demonstrate competence in mathematics, a passing AP score is acceptable, as is a 171 on the PPST in mathematics, OR a B in 3 credits of a math course.

Accepting AP scores as proof of a candidates' mathematics, reading, and writing ability is basically an admission that in order to teach high school, one need only be a smart high-school graduate. Nor is specifying a B in any college math or English composition class a particularly high standard, given the very basic (and generously graded) classes in these subjects available at most colleges.

The Pre-Professional Skills Test, administered by the Educational Testing Service, is divided into three parts: reading, writing, and mathematics. The reading section is designed to measure literal, critical, and inferential comprehension. Questions include finding the main idea of a passage, determining the underlying assumption, and drawing conclusions. The reading and writing sections each require one hour. The writing section is divided between forty-five multiple choice questions and an essay question. It is designed to test whether the candidate can use grammar and language to communicate effectively. For the most part, the multiple-choice section involves correcting sentences.

Here are sample questions from the Pre-Professional Skills Test:

> Alice Fletcher, the Margaret Mead of her day, assisted several American Indian nations that were threatened with removal from their land to the Indian Territory. She helped them in petitioning Congress for legal titles to their farms. When no response came from Washington, she went there herself to present their case.
>
> According to the statement above, Alice Fletcher attempted to
>
> A. imitate the studies of Margaret Mead
> B. obtain property rights for American Indians
> C. protect the integrity of the Indian Territory
> D. become a member of the United States Congress
> E. persuade Washington to expand the Indian Territory
>
> If the italicized phrase is correct, choose A, otherwise choose the correct replacement.
>
> Martin Luther King, Jr. *spoke out passionately* for the poor of all races.
>
> A. spoke out passionately
> B. spoke out passionate
> C. did spoke out passionately
> D. has spoke out passionately
> E. has spoken out passionate
>
> Here is a sample essay question:
>
> Which of your possessions would be the most difficult for you to give up or lose? Discuss why.

The sample essay answers given, even those with the highest scores, are not candidates for Pulitzers. They seem like competent essays by high-school students.

The math section consists of forty multiple choice questions designed to measure the mathematical skills and concepts that "an educated adult might need." They cover such topics as order of whole numbers, estimation, problem-solving, pattern recognition, and geometric properties. The following examples are typical:

> Which of the following is equal to a quarter of a million?

A. 40,000
B. 250,000
C. 2,500,000
D. 1/ 4,000,000
E. 4/ 1,000,000

If P divided by 5 equals Q, then P divided by 10 equals

A. 10Q
B. 2Q
C. Q / 2
D. Q / 10
E. Q / 20

The curriculum at Ohio State focuses on pedagogical theory, but with some emphasis on the specific field the candidate will be teaching.

OSU Curriculum

The curriculum at Ohio State focuses on pedagogical theory, but with some emphasis on the specific field the candidate will be teaching. Course work is said to include "specialty content, integrated content, integrated pedagogy, psychology of learning and teaching, specialty methods, research methods, and a variety of clinical and internship experiences."

Students seeking high-school biology certification are required to take Logic and Psychology in School Mathematics/Science, which is described as "[a] study of the nature of psychological growth and the development of logical ability in children and the implications for teaching science." Also included in the curriculum is Fundamental Ideas of School Science, which focuses on "exploring innovations in science education and the development of knowledge and skills for facilitating integrated, experience-based approaches to science instruction." Courses like Fundamental Ideals of School Technology (which studies societal forces and problems attributed to technology and culminates in the development of a "technology education philosophy") are also an integral part of the curriculum. All in all, there are seven courses like these. It is hard to believe that so many courses on the pedagogy of science teaching could be necessary.

OSU also expects three quarters of student teaching. This begins with observation and then moves on to participation and responsible teaching in a public school. Individual and group conferences and seminars are offered simultaneously in order to give candidates feedback on classroom problems or questions.

Five quarters of full-time study are necessary to complete the OSU program. At the end, a master's project and examination focused on current issues in mathematics, science and technology education are required.

Comparison

The requirements for entry into the teacher education programs in California and Ohio are similar, though California seems more lax in its undergraduate content requirements. CSUS candidates do not have to demonstrate much beyond a basic understanding of the concepts of biology. The Praxis examinations, I am assured by biology majors, could be passed by a student who took AP biology in high school. OSU does not use tests to exempt students from the course work requirements of a biology major. And there are stringent requirements in Ohio for what undergraduate biology and general science course work must include.

> ***Ohio's traditional certification requires a longer time commitment than California's, but it is not clear how many advantages are gained from the extra months.***

While Ohio does not have its own basic skills test, the Educational Testing Service's PPST, which is used by a number of different states, is not much different in content or difficulty from the California Basic Educational Skills Test. The skills required for passing are modest, as indicated by the fact that a sufficiently high AP score will exempt a candidate from taking it. Again, the assumption seems to be that, if a candidate has the reading, writing, and math skills of good high-school student, he or she is ready to teach high school.

Ohio's traditional certification requires a longer time commitment than California's, but it is not clear how many advantages are gained from the extra months. Ohio's program places a greater focus on the pedagogical theories of teaching than the practical applications of it. OSU education students devote a lot of time to figuring out how high-school students might hypothetically learn math and science, but much of this is done before candidates have any real experience in the classroom. California's program seems to do a better job of integrating the practical and theoretical aspects of the instruction.

On the other hand, CSUS's class on multicultural education and teaching in a diverse environment also addresses a subject that might be difficult to learn on a theoretical level. While teachers, especially those going into California's inner cities, may find it useful to have a history of race relations in the schools, this is unlikely to do much to prepare them for the environment they will actually encounter there.

OSU's program also seems to fall victim to the prevailing fascination with technology in education. While there is no reason to object to technology in the classroom, most basic biology experiments can be done without a computer. Growing bacteria can still be done using petri dishes instead of Windows 98.

Both OSU and CSUS require at least a one-year time commitment. They also charge similar amounts of money. CSUS asks $11,400 (including room and board) and OSU charges $13, 904. (Both of these are in-state rates, since most candidates for teacher certification live and plan to teach in the state where they become certified.) This is a considerable sum of money for a recent college graduate to pay.

What is most striking about certification in both states is how little effort there is to exercise real quality control at the conclusion of the programs. Neither state requires any tests after the programs are complete, and neither program requires a certain GPA in order for its students to become certified. There is no guarantee that graduates have mastered any particular material.

An Alternative Route to Certification

Twenty-four states allow prospective teachers to bypass traditional teacher education programs, though how much of a shortcut these alternative certification programs offer varies greatly among these states. For candidates interested in teaching in California, there are bona fide alternatives to the standard, costly, protracted, and not necessarily effective teacher preparation path. These are geared toward both recent college graduates and mid-career professionals looking to switch into teaching.

The fastest way to get into a classroom in California is to complete a program called the "district internship" program, overseen by the California Commission on Teacher Credentialing. It has been around since the 1960s, though it is not well known. Now, however, California has major teacher shortages, in part because of its across-the-board class-size reduction initiative. That, combined with the low percentage of teachers staying past their first year, has led the state to remove some of the hoops candidates had to jump through in order to get certified. In 1996-97, 1,322 teaching candidates were enrolled in the district internship program (compared with 19,200 who completed the standard teacher preparation program that year).

What is most striking about certification in both states is how little effort there is to exercise real quality control at the conclusion of the programs.

In the district internship program, candidates apply for a paid two-year internship, which includes an initial six-week intensive preparation program. Throughout the two years, they must continue training on weekends and during the summer. In order to get one of these internships, candidates must first find a school district that will accept them. Generally, inner city schools will jump at the chance. Suburban schools, where the teacher shortage is not so severe, often don't want the hassle of training an inexperienced teacher.

To be admitted, candidates must have either a major or minor in biology as well as two math courses (not lower than beginning calculus), one physics class, two chemistry classes, four biology classes, and five electives—at least fourteen in all. District interns may not bypass the biology major with the Praxis exams, but must take the Praxis exams in addition to prove their competence in the biology and general science. Candidates for the district internship must, like those in the traditional program, also take the CBEST exam.

Programs like the district internship will be more likely to draw bright college graduates who seek a relatively fast way into the classroom.

The six-week preparation program consists of 120 clock hours of training in child development and teaching methods (in the subjects and grade levels to which they will be assigned). Because the prospective teachers will soon enter a classroom, they are not overloaded with too much psychology or education theory. The curriculum for the district internship centers on questions and problems that arise in the classroom.

The district intern certificate is valid for two years, during which time candidates must receive additional instruction and training—the amount to be determined by the school district—and must receive an annual evaluation of their performance. Because the internship has only recently become more common, it is difficult to get information on the specifics of individual district programs. During the first two years, though, all interns are required by law to have a mentor available to answer their questions on everything from lesson plans to classroom discipline. After the internship, the employer can recommend interns for a professional "clear" credential. After that, there is no additional course work to complete, and the candidate can teach in any district in the state.

Unlike the more traditional programs, candidates are paid a first-year teacher's salary. This, obviously, lightens the financial burden associated with entry into teaching.

Programs like the district internship will be more likely to draw bright college graduates who seek a relatively fast way into the classroom. Especially "hard-science" majors who—perhaps even less interested than their social science and humanities counterparts in the pedagogical theories that education schools are likely to teach—may be more attracted to programs like the district internship. Given that a good part of the teacher shortage in America is in science, this is not a point to overlook. Given that the alternative certification program requires more science preparation than the traditional certification program (and that neither provides any additional training in the subject area), products of alternative certification programs will probably know much more about their subjects.

No Alternative Route in Ohio

Unfortunately for people interested in teaching in Ohio, there is no equivalent of the district internship there. In fact, Ohio has no real alternative preparation programs at all. *Alternative Teacher Certification: A State-by-State Analysis*, by Emily Feistritzer and David Chester, lists one Ohio program; it has been around since 1990, but only one person has actually been certified using it. (Currently no districts are approved for the program.) Moreover, recent education reforms in Ohio have added obstacles to becoming a teacher. Prospective teachers who could once be certified while earning their bachelor's degree must now take an additional five quarters of courses, earn a master's degree, and pay an additional year of tuition (not to mention the income they forego by not working) before they can be certified.

A Weak Alternative

Not all alternative certification programs offer teaching candidates a serious alternative. At first glance, New York seems to offer an easier route to teacher certification than Ohio because it has an alternative certification program (at least in New York City). But this is deceptive.

The process in New York begins like the one in California: a candidate must be nominated by a school district, complete a few requirements, and then be granted a Preparatory Provisional Certificate (PPC) enabling him or her to go directly into a classroom.

Before earning the PPC, however, the candidate must have thirty-six semester hours in the intended subject of instruction as well as eighteen hours in teacher education. According to the New York Department of Education's website (www.nysed.gov/tcert), these should "enable the teacher to create a productive learning environment, plan and execute instructional activities, and monitor and assess student learning in the middle level grades through grade 12. Teachers must be prepared to address the special developmental needs of adolescents through young adults. The concentration must prepare the teacher to work effectively with students from minority cultures, students of both sexes, students from homes where English is not spoken, students with handicapping conditions, and gifted and talented students." Candidates should also have completed a year of college level study (or the equivalent) of a language other than English. Finally, they must take a two-hour seminar in detecting child abuse.

What alternative certification means in New York is really just deferral of the regular requirements, which are some of the most elaborate in the land.

These requirements could be completed fairly easily during college. Unfortunately, passing them does not make a candidate a fully certified New York City Public School teacher. In order to begin the alternative certification program, he or she must first develop an education plan with the Office of Recruitment, Personnel Assessment and Licensing (ORPAL) showing that all the traditional New York State certification requirements will be completed within a period of four years. What alternative certification means in New York, therefore, is really just deferral of the regular requirements, which are some of the most elaborate in the land. These requirements include supervised student teaching, passing several tests, and acquiring a master's degree.

Candidates for traditional certification must have a supervised student-teaching experience in both the middle and high school grades. If the candidate pursues the alternative route, then the classroom experience accumulated in the alternative program counts as a year of experience so long as a recommendation is received from his or her supervisor.

Candidates for a provisional certificate must then pass a slew of tests. These are known as the New York State Teacher Certification Examinations (NYSTCE) and are given by different testing organizations at different times to test different skills. The first one is the Liberal Arts and Sciences Test. Its purpose is to assess knowledge and skills in scientific and mathematical processes; historical and social scientific awareness; artistic expression and the humanities; communication skills; and written analysis and expression.

Some examples from the Liberal Arts and Sciences Test:

> Last year in Proctorsville, it rained or snowed on 164 days. There was sunshine in Proctorsville on x days. What is the value of x?
>
> Which of the following questions must be answered before it is possible to solve this problem?
>
> I. Were there more days of rain, more days of snow or more days of sunshine?
>
> II. How many days did the sun shine in Proctorsville when it also rained or snowed?
>
> III. How many days did the sun shine in Proctorsville when it did not rain or snow?
>
> IV. What is the ratio of days with sunshine in Proctorsville to rainy days?
>
> A. I only
>
> B. I and II
>
> C. II and III
>
> D. IV only

There is also a written assignment which provides two passages requiring analysis. They give a good sample response. (There is also a warning on the bottom of this page. It says: "The sample response on the following page is for illustrative purposes only. Copying this essay or significantly or substantially paraphrasing it will not be accepted.'" One wonders how many people started writing down the sample response from the registration bulletin when they got to the test.)

The second test is called the Assessment of Teaching Skills (ATS), which is designed to gauge the learner's knowledge of the learner (by which seems to be meant understanding of child development, etc.); instructional planning and assessment; instructional delivery; and professional environment.

One example from the Assessment of Teaching Skills will suffice:

> Which of the following methods of assessment would be most effective in providing the teacher with information about whether students have internalized and can apply concepts developed in a lesson about adverbs?
>
> A. having each student independently generate a definition of the concept, in his or her own words, the day after the lesson
>
> B. asking students to create their own examples and nonexamples of the concept
>
> C. providing students with examples of the concept and asking them to use the examples correctly in the original sentence
>
> D. having students select examples and nonexamples of the concept from a page of paired sentences.

Unlike the other standardized tests that appraise literacy or content knowledge, the tests that stress professional skills are difficult. Not because they are intellectually challenging, but because it seems that there might be more than one answer and unless a test taker has the correct understanding of pedagogical theory, he or she might get it wrong. The answer is B, but it is not clear why. If I were a fourth grader trying to show that I understood the lesson about adverbs and a teacher told me to give examples, I would start arbitrarily picking words that ended in -ly, and the teacher wouldn't know that I didn't understand that adverbs have something to do with verb modification.

For candidates interested in teaching at the elementary school level, alternative certification is generally not an option anywhere.

The ATS also includes an essay on how to solve problems like poor peer interaction in the classroom.

Finally, in order to demonstrate competence in the subject the candidate intends to teach, he or she must take a Content Specialty Test, consisting of 100 multiple choice questions. A candidate in Middle School Social Studies, for instance, must demonstrate knowledge in history; geography and culture; economics; government and political science; and social studies skills.

After one year of teaching and passing all of the tests, a candidate will still have earned only a provisional certificate, valid for five years, during which time he or she must meet all of the requirements for the permanent certificate, as provided for in one's ORPAL plan.

In order to get a permanent certificate, the candidate must get a masters degree in a field that is educationally related to the license field (e.g., science education). Candidates must also complete six credits in special education and two credits in human relations. Finally, the second part of the ATS test, a video exam that records a teacher's performance for later evaluation, must be taken. Only after all these requirements are complete will the state of New York issue a permanent teaching certificate.

New York City's alternative program allows candidates to put off certain requirements, but candidates are by no means exempted from them. On the whole, New York's teacher certification requirements are some of the longest and most involved regardless of the route the candidate chooses. The state has no true alternative certification program.

Teacher Certification for Elementary Education

For candidates interested in teaching at the elementary school level, alternative certification is generally not an option anywhere. This is true for three main reasons: (1) knowledge of pedagogy is considered to be even more important at the elementary level than it is at the secondary level; (2) specialized academic expertise seems to matter less because a wide range of subjects is taught, all at a lower level; (3) teacher shortages are not widespread at the elementary level so there is less incentive for a state to allow candidates to bypass traditional requirements.

Minnesota has no elementary-school teacher shortage at all and thus no alternative certification programs, with one exception: the Collaborative Urban Educator, a joint venture by the Minneapolis and St. Paul Public Schools and the University of St. Thomas. This program is only open to applicants of color, however—a fact that is not clearly disclosed in official communications. Specialists at the Minnesota Department of Education Personnel Licensing Division say that there may be other alternative certification programs, but they have never heard of any.

All of the traditional teacher certification programs in Minnesota are virtually identical because state law spells out their specific requirements more than most other state laws do. The details are then added by the Minnesota Department of Families and Children. Some of the state regulations seem sensible. For example, Minnesota has an undergraduate course distribution requirement for admission to a teacher education program. Students must take one-third of their college classes in the humanities, social sciences, natural sciences, and mathematics. (It is hard to imagine what the other two thirds might consist of.) There are no requirements regarding the candidate's major field. It could be biochemistry or physical education.

The University of Minnesota offers a teacher education program that is typical for Minnesota and satisfies all state requirements. Its admission requirements are similar to those in other states. Applicants must demonstrate a minimum GPA of 2.80 and pass the Pre-Professional Skills Test. The candidate must earn PPST scores of at least 173 in reading, 172 in writing, and 169 in math. (See sample questions in Ohio section). The university also requires some computer knowledge and experience with diverse populations of children.

The elementary education program at the University of Minnesota includes twenty-four weeks of classes (two semesters) and ten weeks of student teaching that builds on principles and methods used in courses. The required courses can be divided almost evenly into two groups. The first contains courses that cover how to teach particular subjects. The content is fairly straightforward and devoted mostly to curricular decisions and lesson plans. These courses include

- Theory and Practice of Teaching Art in Elementary Schools: art concepts, skills, and processes appropriate for elementary level children.
- Survey of Children's Literature: techniques and materials
- Teaching Reading in the Elementary School: reading programs from the perspective of historical change, language research, and demographics
- Teaching Language Arts in the Elementary School: improvement of instruction and study of trends
- Introduction to Music Education
- Teaching Science in Elementary Schools: materials, resources, and methods
- Teaching Health in Elementary Schools: materials, resources, and methods
- Teaching Social Studies in the Elementary Schools: content and organization of programs, improving learning situation, and effective use of materials
- Teaching Math in Elementary Schools: objectives, content, philosophy, instructional materials, methods of instruction, and evaluation

The route for becoming a teacher in Minnesota is one-size-fits-all, and prescriptive state requirements ensure that there is no variety among the preparation programs.

The second group of classes is more pedagogically focused. It includes Technology for Teaching and Learning, which explains how technology can be used to create and access educational materials, communicate with other users, and sort electronic databases. A course called Building a Learning Community covers major theories and research on schooling as it relates to human interactions, small groups, face-to face relations, and individual personality and social development. There are also a number of courses connected to child development. A course on Biological and Physical Foundations of Education is described as an overview of biological and physical development from birth through adulthood and the relationship of this development to education. There is also a course on the Learning and Cognitive Foundations of Education.

Some of these pedagogy courses seem more practical than others. For example, the introduction to elementary-school teaching includes information on curriculum, organization, instruction, and professional decision making. Principles of development involves learning about classroom management and instructional delivery, and related topics and their application to teaching and curriculum.

While it may be true that elementary-school teachers should know more about the "learning process" than their high-school counterparts, this curriculum seems a little excessive. Full courses on "building a learning community" and "teaching with technology" seem extravagant. More time spent in student teaching would likely prove more useful. Also, most candidates for teacher certification have probably given some thought to the role of a school and might not need an entire course devoted to "school and society." This course includes readings in social science and philosophy concerning the role of school in changing American society.

The most serious problem with teacher certification in Minnesota is that there is no way around these requirements. It doesn't matter whether the candidate decides he wants to be a teacher when he is sixteen or forty or whether he has any relevant experience or not. The route for becoming a teacher in Minnesota is one-size-fits-all, and prescriptive state requirements ensure that there is no variety among the preparation programs.

Overview of Six States

The chart that follows shows requirements for certification in six states. It contrasts the traditional route to certification, which exists in every state, and the simpler route offered by some alternative certification programs, for instance, the district internship program in California.

These states were selected for several reasons. California and Texas are large and have alternative programs. Minnesota, a state which is not facing significant teacher shortages, was included because it got the highest marks on the "report card" issued by the National Commission on Teaching and America's Future, which rewards states for lengthening teacher-training programs and requiring that they be aligned with the recommendations of professional organizations.

Every year, bright students from the nation's top colleges decide to teach but don't head toward public schools.

The chart also includes different academic subjects and levels of teaching. While choice of subject does not much affect the load of requirements, the level of teaching matters significantly. There are practically no alternative certification programs in the country for elementary-school teachers.

The categories are straightforward. "Admissions requirements" covers what applicants need before they can enter the program. Depending on the program, the candidate can apply during college or after. "Course requirements" involves what must be taken after the candidate enters the program. "Tests" includes those that must be taken to enter the program as well as any taken during and after the program.

Some states, like Minnesota and Virginia, have no alternative certification programs. The traditional path listed on the chart is the only one possible in these states.

The case studies presented in this report indicate that the system generally serves to constrict the pool of teaching candidates in ways that are unreasonable and even detrimental to the original goal. Those who wish to teach encounter a series of obstacles of uncertain value. Those weeded out are not necessarily incompetent, and those who make it through are not necessarily competent. While states like California are moving toward a system in which it is easier for qualified candidates to become certified, states such as Ohio are making it more difficult.

Every year, bright students from the nation's top colleges decide to teach but don't head toward public schools. Instead, they accept lower salaries and larger workloads at private and charter schools, at least in part to avoid the obstacle course of public-school teacher certification. Recruiting these talented teaching candidates to the public schools will require us to rethink state requirements for teacher licensing.

Table 1

State	**California**	**California**
Traditional or Alternative	traditional	alternative
School	California State University Sacramento	district internship
Level examined	high school	high school
Subject examined	biology	biology
Basic requirements	B.A. with major or minor in biology (or take Praxis Series bio exams), 2.75 GPA, statement of professional goals and experiences related to teaching, group interview, completion of post-baccalaureate program at CSUS	B.A. with minor or major in biology, nomination from school district, completion of six-week training program (120 hours)
Course requirements within the program	Two semester program: one class on each of the following: multicultural education, educational psychology, secondary school teaching methods, teaching methods for science, classroom concerns, teaching reading	Six-week intensive preparation program on classroom management, curriculum development, etc.
Student teaching requirements	Begins with start of classes. One month of observation, three months as classroom assistant, one semester of five-days-a-week, four-hours-a-day teaching	Two years of teaching experience
Test requirements (entry and exit)	California Basic Educational Skills Test	California Basic Educational Skills Test
Duration	Two semesters full-time after undergraduate degree	Six weeks (plus two years of paid teaching)

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Table 1. Continued

State	**Ohio**	**Virginia**
Traditional or Alternative	traditional	traditional
School	Ohio State University	Old Dominion University
Level examined	high school	elementary
Subject examined	biology	multiple
Basic requirements	B.A. with major in biology, GPA of 3.0, completion of masters degree at OSU	B.A. with major in interdisciplinary studies, GPA of 2.5, personal interview, writing proficiency
Course requirements within the program	Seven courses on pedagogical methods like Fundamental Ideas of School Science and Logic and Psychology in School Science	120 total credits with approximately forty-two in two areas of concentration, fifth year program with thirty credits in pedagogical methods like The Special Needs Child in the General Education Classroom and Fundamentals of Human Growth and Development
Student teaching requirements	Three quarters of student teaching beginning with observation and then practice	One semester of student teaching, five days a week
Test requirements (entry and exit)	Pre-Professional Skills Test reading score of 171, writing 169, mathematics 17	Pre-Professional Skills Test
Duration	Five quarters after undergraduate degree	One year after undergraduate degree

Table 1. Continued

State	Minnesota	New York
Traditional or Alternative	traditional	traditional
School	University of Minnesota	SUNY Cortland
Level examined	elementary	middle school
Subject examined	multiple	social studies
Basic requirements	B.A. with certain distribution requirements across humanities, social sciences, natural sciences, and mathematics, GPA of 2.80, computer knowledge, experience with diverse populations of students, completion of masters in education at U of M	B.A. with major in history, including a number of other distribution requirements, with 2.5 overall GPA and 3.0 in history, letters of recommendation. Completion of a masters degree is required for a permanent certificate
Course requirements within the program	Two semesters of classes, with approximately half in resources methods and materials for particular subjects and half in pedagogical methods	Master's degree includes fifteen hours of classes in social science as well as six hours of courses in professional education which can include courses on curriculum as well as urban education, two hour seminar on detecting child abuse and some other electives for a total of thirty hours of classes
Student teaching requirements	Ten weeks of student teaching	Usually a few years of teaching is required before the candidate can begin a masters degree program
Test requirements (entry and exit)	Pre-Professional Skills Test reading score of 173 writing 172, mathematics 169	Liberal arts and Sciences Test, Assessment of Teaching Skills (written and video), GREs (to be admitted to program), Content specialty test in Social Studies
Duration	One year after undergraduate degree	One year after undergraduate degree and four years of teaching

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Table 1. Continued

State	New York	Texas
Traditional or Alternative	alternative	traditional
School	New York City program	University of Houston
Level examined	middle school	middle school
Subject examined	social studies	social studies
Basic requirements	Nomination by school district, B.A. with major in history as well as eighteen semester hours of professional education, one year of foreign language study	Major in history, economics or political science. 2.5 GPA overall and in field of certification, completion of university English requirements, and sixty semester hours of courses completed. C or better in speech communication course, application completed during junior year
Course requirements within the program	One year of teaching with preparatory provisional certificate, which is only valid for four years, during which time all of the traditional requirements must be completed (see above)	Computer literacy, English composition, physical education, six semester hours of cultural heritage courses, six hours US history, six hours psychology, six hours political science, thirty semester hours history, including eighteen advanced, eighteen hours professional education, including teaching methods, educational psychology, etc.
Student teaching requirements	None prior to start of program	Two semesters student teaching
Test requirements (entry and exit)	Liberal arts and Sciences Test, Assessment of Teaching Skills (written and video), GREs (to be admitted to program), Content Specialty Test in Social Studies	Texas Academic Skills Program (can be exempted with sufficient SAT or ACT scores), Examination for the Certification of Educators in Texas (taken at the end of program
Duration	No training required immediately after college, but masters degree program requires approximately one year	Completed during time as an undergraduate (four-year program)

Table 1. Continued

State	**Texas**
Traditional or Alternative	alternative
School	Region XIII alternative certification program
Level examined	middle school
Subject examined	social studies
Basic requirements	B.A. with eighteen semester hours in economics, geography, history, and government, and twenty-four semester hours in one of them (twelve of which must be upper division), 2.5 GPA in major in 2.5 GPA overall
Course requirements within the program	Curriculum which focuses on content knowledge, pedagogy, learner diversity, professional responsibilities, and specialized knowledge and skills for level and subject of teaching. For three months, classes are held thirteen hours/week. After internship begins, twelve hours/month
Student teaching requirements	Two weeks of student teaching and one year of teaching experience
Test requirements (entry and exit)	Texas Academic Skills Program (can be exempted with sufficient SAT or ACT scores), Examination for the Certification of Educators in Texas (taken at the end of program)"
Duration	Three months of part time classes and one year of teaching experience

The National Board for Professional Teaching Standards: Can It Live Up to Its Promise?

Danielle Dunne Wilcox

The National Board for Professional Teaching Standards has been lauded by educators and public officials from the Clinton administration to Republican governors. While the goal of the Board—identifying and certifying master teachers—has broad appeal, in fact the activities and processes of the Board have not been subject to serious evaluation. This pioneering report explores in depth how National Board certification works, from the portfolios submitted by applicants to the training of scorers. After scrutinizing the Board's standards, the validity of its scoring system, and extant research on its effectiveness, Wilcox concludes that the Board's standards and assessments are too flawed to support the claims that are being made on its behalf.

Introduction

In the nation's ongoing efforts to strengthen student performance, teacher quality has emerged as a focal point for reform. President Clinton singled out this issue in his 1999 State of the Union message, stating that, "all states and school districts must be held responsible for the quality of their teachers."[1] Secretary of Education Richard Riley went further, arguing in his 1999 State of American Education speech that public education cannot improve "unless we make teaching a first class profession."[2] One key to accomplishing this, according to Riley, is the credentialing service offered by the National Board for Professional Teaching Standards (NBPTS).

Founded in 1987 and headquartered in Southfield, Michigan, the National Board is a private organization that seeks to identify and certify master teachers in different areas of specialization, such as high-school math or elementary education. It likens itself to medical specialty boards that certify doctors for superior levels of competency in such specialties as cardiology, surgery, or neurology. Board certification in medicine is not a prerequisite in order to practice; rather, it is a way for a doctor to demonstrate that she is an exceptionally knowledgeable and capable physician. In turn, medical board certification affords patients greater confidence in the quality of a doctor's judgment and care. The NBPTS has set similar goals for itself. It seeks to certify teachers who have demonstrated that they are highly accomplished; hence parents and taxpayers should feel confident that these specially-designated teachers will enhance students' learning.

The National Board sets three main goals for itself: (1) to promulgate high standards for what accomplished teachers should know and do, (2) to develop and operate a national, voluntary certification system to assess and certify teachers who meet these standards, and (3) to advance education-related reforms for the purpose of improving student learning.[3] Several objectives are at work here: providing teachers with a nationally portable license, keeping good teachers in the field, raising the quality of the teaching field overall, and boosting the level of public respect for teachers. As one National Board Certified Teacher (NBCT) stated, "Teachers need more respect. We need to be treated like professionals."

At the national level, President Clinton and Secretary Riley are promoting NBPTS. In addition to hosting a White House ceremony in 1997 to commemorate its tenth anniversary, Clinton used his State of the Union speech to announce federal support for NBPTS certification of 100,000 teachers. At the state level, legislators, NBCTs and teachers' union leaders are promoting National Board certification as an engine of reform.

Yet for all the ballyhoo, any initiative designed to improve teacher quality should be subject to rigorous assessments to ensure that it is actually accomplishing that important purpose. In this report, we look at the history and structure of the Board and review what candidates experience as they go through the certification process. This inquiry forms the background for an appraisal of the likelihood that NBPTS actually offers a valuable solution to the intransigent problem of teacher quality.

The NBPTS seeks to certify teachers who have demonstrated that they are highly accomplished.

A Board is Born

Myron Lieberman, formerly an American Federation of Teachers official, now a union critic and president of the Education Policy Institute, first imagined a national board for teachers in his 1960 book, *The Future of Public Education*.[4] Actually, he visualized multiple boards, each representing a different academic discipline. For example, he hoped the National Council of Teachers of Mathematics in collaboration with the American Mathematical Association would come up with standards and assessments for math teachers. A neutral organization, such as the Educational Testing Service, would administer the tests. Lieberman advanced the concept of education specialty boards as a way to counter union anxieties that merit pay would inevitably be associated with favoritism, i.e., some teachers would receive merit pay not because they were effective but because they had a cozy relationship with the principal. The unions dealt with this concern in most districts by negotiating uniform salary schedules. Lieberman criticized that approach because it deterred many good teaching prospects who would choose other fields that promised higher income and greater opportunity for individual attainment. His national certification boards were designed to eliminate favoritism and give states the confidence and political support from the unions to allow some teachers to earn higher salaries.

During the early 1960s, Lieberman unsuccessfully sought funds to implement voluntary national board certification. He reluctantly set aside the idea until 1985, when he revived it as a proposal to American Federation of Teachers president Albert Shanker. Lieberman suspected that Shanker, then under fire from state legislators for opposing merit pay, would welcome an approach that was less vulnerable to traditional union concerns. With Lieberman's permission, Shanker publicized the idea.

Membership on the Board is configured in such a way as to ensure that teachers and their unions are in charge.

Indeed, he did more. Relying heavily on his influence with the Carnegie Forum on Education and the Economy, Shanker parlayed the concept into a major study by the Carnegie Task Force on Teaching as a Profession. With the alarms from the 1983 *A Nation at Risk* report still reverberating through America, the Carnegie Forum was well positioned to offer education reform resolutions that would stir public interest. The result was publication in 1986 of *A Nation Prepared: Teachers for the 21st Century*. This manifesto called, inter alia, for establishment of a national board that would: (1) promulgate high standards for what accomplished teachers should know and be able to do; (2) develop and operate a national, voluntary certification system to assess and certify teachers who meet these standards; and (3) advance education related reforms.[5] This document provided a blueprint for a single national board that would credential teachers in their various areas of specialization.

By this time, Lieberman himself had grown wary. He had proposed the board concept as something external to the unions. By the time Carnegie released its report, however, it was clear that the Board would be dominated by the National Education Association (NEA) and American Federation of Teachers (AFT), the nation's two largest teachers' unions. But Lieberman's change of heart did not impede the plan. Under Shanker's influence and that of other prestigious and loquacious task force members, such as Governor James Hunt (Dem.) of North Carolina, the concept gathered steam.

The Board came to life when the Carnegie Corporation made a $1 million start-up grant and appointed its first twenty-nine members in May 1987. Many of the original members were drawn from the Carnegie Task Force. At one of their first meetings they elected thirty-four additional members, bringing the Board's total membership to sixty-three. The first and to date only president, chosen by a vote of the Board's twenty-nine original members, is James Kelly, a former high-school history teacher and officer at the Ford Foundation. (Kelly, having served twelve years, will retire at the end of 1999.) With leadership in place, the Board set about the task of raising funds and developing a procedure for certification.

Membership on the Board is configured in such a way as to ensure that teachers and their unions are in charge. A key provision of the bylaws specifies that a majority of the Board must be active teachers.[6] Today, forty-two of the Board's sixty-three directors are teachers. Fourteen are selected for their record of teaching accomplishment. Another fourteen are recognized leaders in their subject area. The final fourteen are leaders of the two teachers' unions at the local, state or national levels, with half of this group representing each union.[7] Although only fourteen of the sixty-three members *must* be NEA/AFT leaders, all but a couple of the other twenty-eight teachers on the Board are union members. Thus, nearly two-thirds of NBPTS directors are members or leaders of the NEA and AFT. The remaining twenty-one directors come from a variety of fields, but at least half must be public officials with governance or management responsibilities for public schools. This group now ranges from state governors, such as Gary Locke of Washington to Portland Superintendent Benjamin Canada to Gail Huffman-Joley, Dean of the School of Education at Indiana State University.

The development of standards and assessments for a certificate area follows a lengthy and involved process.

Funding

The NBPTS set to work raising money for its work and was, by all measures, quite successful. In addition to continuing grants from the Carnegie Corporation, the Board received funding from the DeWitt Wallace-Reader's Digest Fund, Ford Foundation, and Pew Charitable Trusts, among others. By 1988, the Board had also found friends in the U.S. Senate. Senator Christopher Dodd (D-CT) introduced legislation (S. 2698) that would allocate $25 million to the Board's work. The Board justified its need for federal funding to speed up the design and implementation of a national certification process. Former Governor Thomas Kean (R-NJ), then a member of the NBPTS board of directors, testified before Congress, "We could do it without the federal government, but it would take ten years, and I don't think the nation can wait that long."[8] Financial support for the Board was eventually approved by the Democratic-controlled Congress over the objections of President Reagan's Department of Education. The Department of Education disputed such a large appropriation because NBPTS had not submitted a "detailed research agenda" which was "customary procedure" at the time. Chester E. Finn Jr., then assistant secretary of education (and current president of the Thomas B. Fordham Foundation) testified against Dodd's bill, noting that the board's backers "want to have their cake and eat it too" by seeking substantial federal aid but insisting they remain free from federal control.[9] The bill that eventually passed allocated $19.3 million to the Board over four years for research and development of certificates. But that was not the end. To this day, NBPTS continues to receive federal funding. Most recently, the Board received $18.5 million in FY1998 and the same amount in FY1999.[10] By the end of 1999, the Board will have absorbed over $70 million in federal aid with essentially no oversight or accountability.

Developing Standards and Assessment

With financial backing secured, the Board began developing standards and assessments. First, it promulgated five core propositions to be used as the basis for those standards:

1. Teachers are committed to students and their learning.
2. Teachers know the subjects they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities.[11]
   [See Appendix A for the Board's full statement of each proposition.]

The NBPTS has decided to certify teachers in thirty-three different fields. The areas overlap with but do not mirror state licensing requirements. Because licensing requirements vary in number and scope, it would be impossible for the Board to have them mesh perfectly with all state licenses. Instead, the Board designed its certificate areas around two matrices. One divides them by students' developmental ages. This matrix encompasses

- Early Childhood (ages 3-8);
- Middle Childhood (ages 7-12);
- Early Adolescence (ages 11-15);
- Adolescence & Young Adulthood (ages 14-18+).

The other matrix is content area, such as mathematics, English language arts and "generalist," a term that implies the teacher should know about all subjects for the age group she teaches. As an example, a high-school biology teacher would apply to become board-certified in "Adolescence & Young Adulthood/Science." A fourth-grade classroom teacher would seek certification as a "Middle Childhood/Generalist." [See Appendix B for a full list of the thirty-three certificate areas under consideration.] Today, twelve of the thirty-three certificates are available, while the remaining certificates are in various stages of development. According to Dr. Valerie French, NBPTS Vice President for Assessment Development, all thirty-three will be available in five years. A certificate is good for ten years and renewable, although NBPTS is still working out how it will handle recertification.

The development of standards and assessments for a certificate area follows a lengthy and involved process. First, the Board appoints a standards committee. The majority of members are active teachers who are distinguished in their field. The rest are school and district administrators and professors drawn from the field under discussion, from child development, and from teacher education. Second, the committee is charged with developing standards that

- highlight specific aspects of teaching that reflect accomplished practice, while emphasizing the holistic nature of teaching;
- describe how the standards come to life in different settings;
- identify the knowledge, skills, and dispositions that support a teacher's performance at a high level;
- show how a teacher's professional judgment is reflected in observable actions; and
- reflect the five propositions outlined above.[12]

The committee's draft standards are reviewed by the Certification Standards Working Group (a subcommittee of the Board itself) before going into a public review process, where they are presented at regional and national meetings and made available to interested individuals. (Currently, Early Childhood and Middle Childhood Art draft standards are available for public review.) The review process lasts three months, after which the Board finalizes the standards.

Each certificate area is then developed through an Assessment Development Laboratory (ADL). Working with the NBPTS, the ADL develops and field tests assessment instruments and produces related resources, such as test manuals, instructions for candidates and examiners, and scoring keys.[13]

NBPTS decided early that its assessment mechanism would be designed to evaluate teachers' "pedagogical content knowledge." In order to evaluate a teacher's skill, the Board opted to create an assessment system that would attempt to evaluate a teacher in the act of teaching. Hence, Board certification involves no objective tests. Instead, it focuses on teacher-submitted evidence of accomplishment, as documented in lesson plans, evaluations of their students' work, and videotapes of their classes. Additionally, teachers respond to four timed essay questions about hypothetical teaching situations.

In 1999, the Board anticipates that 7,700-plus candidates will seek certification in twelve different fields.

Divining a Master Teacher

Although Board certification is still new, demand for it has steadily increased. NBPTS spent seven years developing its first certificate areas: Early Adolescence/English Language Arts and Early Adolescence/General. In January 1995, the Board certified its first eighty-one teachers. Over the last four years, 1,836 teachers have been Board certified. Each year, NBPTS has seen the number of applicants triple. In 1999, the Board anticipates that 7,700-plus candidates will seek certification in twelve different fields.

What Motivates Teachers to Pursue Certification?

Although the Board advertises, teachers often learn about it from NBCTs, from district coordinators of professional development, and from union representatives. Bob Matthews, a Maryland NBCT, said he heard his superintendent praise it and thought he might like to try it in order to improve both his teaching and his marketability.[14] Another teacher, Margaret Johnson, had been involved with North Carolina's new state standards board, which was modeling itself on NBPTS. Johnson decided she should become certified to prove to herself and others that she really was a "master teacher" who belonged on the state teaching standards board. Natalie Crane, who had already been chosen as a state teacher of the year, viewed Board certification as a professional challenge. She was relieved that she passed inasmuch as she "had put [her] reputation on the line." Other teachers sought certification in order to receive the recognition they thought was their due. Teachers also acknowledged an interest in the salary bonuses that thirteen states now offer (and more are considering).

How it Works

To be eligible, candidates must meet several basic requirements: they must have earned a bachelor's degree, hold a valid teaching license in states that require it, and have three years of teaching experience. Private-school teachers who do not hold a teaching license but are teaching in an accredited school recognized by the state are also eligible to apply.

The certification process from start to finish takes a full year, sometimes longer. Applicants who meet the three basic eligibility requirements must pay an application fee of $2,000. Although this fee is fairly steep, there are multiple ways of covering it. The federal government has appropriated funds to subsidize ten candidates per year in each state; and many states and districts pay for most, and sometimes all, of the application fee for a limited number of candidates. Matthews, for example, applied to the Maryland Department of Education to be included among the fifty teachers that it sponsors. The NEA and AFT also offer loan and subsidy programs for their members. The final recourse is, of course, paying out of pocket.

Once The Psychological Corporation (TPC), a San Antonio-based firm that processes NBPTS applications receives payment, it sends out the portfolio kit. Each applicant must submit six "performance-based assessment portfolios" and take four "assessment center exercises." The six portfolios break down as follows:

- Entries 1 and 2 require submitting examples of students' work and a reflective commentary about the students' progress;
- Entries 3 and 4 include videotapes of the class at work and a reflective commentary from the teacher;
- Entry 5 asks a teacher to document her involvement in her profession; and
- Entry 6 asks the teacher to document her involvement with her students' families.

The four remaining entries can be taken care of in a single day at a Sylvan Technology Center or other testing site. Applicants are asked four open-response questions and have ninety minutes to respond to each.

Apparently, arrival of "the box," NBPTS lingo for (and a literal description of) the portfolio kit, is a momentous occasion. Matthews said he rushed home from school each day the week the box was due to arrive. The box contains the standards document for the certification field, manuals with meticulous directions about how to prepare the six portfolios, and information about what to expect at the assessment center. For example, someone applying to be certified in Early Adolescence/Social Studies-History would receive a document identifying the twelve standards that the National Board has determined for this field. The box would also provide the teacher with detailed guidance about the preparation of her social studies portfolios.

To provide a better understanding of how candidates' portfolios are assessed, the Board offers a two-day Scoring Institute four times a year. Attendees include NBCTs, local and regional facilitators (people who provide guidance and support to National Board candidates), and education professors who are trying to align their teacher-training curricula with National Board standards and assessment methods. At a recent Scoring Institute in Washington, D.C., the Middle Childhood/Generalist (MC/GEN) certificate area was presented in detail. This area is designed for someone who teaches students from ages seven to twelve and who handles the range of middle-school curriculum: language arts, math, science, social studies and history, the arts and health.[15] Looking more closely at the requirements for this certificate will illumine the process. Although topics vary by certificate field, the structure of the six portfolios and four assessment center exercises remains the same.

Portfolio Entries 1 and 2: Reflecting on Student Work

Entries 1 and 2 ask the teacher to submit examples of her students' work with an accompanying commentary in which she reflects on their progress. For the MC/GEN certificate. Entry I is titled "Writing: Thinking Through the Process." Here the candidate is to demonstrate how she uses writing to develop her students' thinking and writing skills. As evidence, she must submit two "prompts" (directions for student assignments), one related to a social studies-history lesson and one for fictional narrative writing; she must also submit examples of two students' responses to each prompt. The teacher may submit up to twenty pages of drafts per student. Finally, the teacher submits a twelve-page commentary in which she describes the progress that these two particular students are making, what she has done to encourage their progress, and what she would do differently. In her commentary, the teacher is supposed to address the standards for the MC/GEN certificate.

In Entry 2 the "teacher shows his/her pedagogical expertise in science" by submitting lesson plans for a six-week science unit that incorporates "big ideas" and specific skills for students, and by submitting examples of two students' work.[16] The emphasis in both entries is on the teacher's pedagogical expertise, not her knowledge of the content area or the actual achievement of her pupils. The directions are clear: "the focus is on the [teacher's] practice, not on the level of student performance."[17] Thus, teachers are encouraged not to include their top students.

Portfolio Entries 3 and 4: Reflecting on Student Interaction

For Entries 3 and 4 in all certificate fields, the teacher submits short videotapes (fifteen minutes long for Entry 3 and twenty minutes long for Entry 4) and accompanying commentaries to demonstrate how well she meets the standards. For the MC/GEN certificate, Entry 3 asks teachers to show how they "build community in their classrooms."[18] Teachers pose a topic to their students and then film small group discussions about it. For instance, in NBCT Margaret Johnson's class, two fourth-grade students were fighting, so Johnson quickly quelled the fight and formed small groups to discuss what the class could do in the future to prevent this from happening. Along with this videotape, the teacher submits an essay in which she reflects on how well the lesson helped the class build community.

According to NBPTS, accomplished teachers are leaders within their profession and have strong ties to the families of their students.

In Entry 4, the MC/GEN certificate candidate is asked to film her students' discussing a math lesson. Teachers should explain a math concept before the film starts rolling and then capture on videotape twenty minutes of the youngsters discussing it with one another. For example, Matthews, a Maryland NBCT, had his third-grade students sit in a big circle on the floor working with manipulative units and meter sticks to figure out how to build a playground. In his commentary, he explained the ways in which the students were learning about measurement by discovering its applicability to a real-life situation. He explained that his pedagogical approach met MC/GEN's "Standard VI:

Meaningful Applications of Knowledge and Standard VII: Multiple Paths to Knowledge."[19]

Portfolio Entries 5 & 6: Documented Accomplishments within the Profession and with the Family

According to NBPTS, accomplished teachers are leaders within their profession and have strong ties to the families of their students. Therefore, a teacher seeking certification in any field needs to document a high level of involvement with her colleagues and her students' families. Entry 5 asks the teacher to keep a log of all her professional activity outside the classroom and to submit evidence that she has served in leadership positions. To ensure that teachers do not manufacture professional accomplishments, a colleague signs the candidate's statement, attesting to its veracity.

For Entry 6, the teacher illustrates that she has a high level of contact with her students' families by keeping a log of all parental contact and submitting letters and summaries of events held for parents, also verified by a colleague. For example, Matthews submitted a summary of an event he organized. To promote literacy, he invited students and their parents to come to school for a bedtime-story night. Parents and students, clad in pajamas, sprawled on the gym floor reading *Under the Lemon Moon* and other books.

All certificate fields require that a candidate respond to four open-ended questions.

Kissing the Box Goodbye

As the April deadline approaches, candidates frantically finish their entries. Procrastinators are writing up their reflective commentaries just days before their deadline, calculating how late they can submit the "box" and still have it arrive on time. The chat room on the NBPTS Internet site is fraught with panic. Last minute questions light up the screen: "Is it acceptable to handwrite Description # and page #s on artifacts? PLEASE ANSWER SOON." "How should I best address the standards? Please, just give me a sample sentence. I'm begging!!!!" Another writes, "Help, my brain is fried!!"[20] Apparently submitting the box, which contains the applicants' two videotapes, student work, and numerous reflective essays, is an emotional moment: "I mailed my package this afternoon and I cried letting that box go."[21] Matthews recalls, "I took [the box] to the UPS and kissed it good-bye. I sent my life for the last year to Texas."

Assessment Center: 4 Separate Scores

With the portfolio entries submitted, the applicants now have a couple of months to prepare for their day in the assessment center. Sometime in the summer, the candidate heads to a local Sylvan Technology Center to undergo the second portion of the application process. All certificate fields require that a candidate respond to four open-ended questions. The purpose is to test the teacher's pedagogical content knowledge and her ability to make quick judgments about a student's performance as well as to verify the accuracy of the teacher's portfolio assessments.

NBPTS gives guidance about what questions to expect. Questions may be "based on stimulus materials that are mailed out well in advance of the assessment center date."[22] Until 1999, candidates could bring materials with them to the assessment center so long as they left them with Sylvan staff. Now they may only bring handwritten notes, although it appears the Board is yielding to candidates' requests to bring typed notes. (Last year, one of the prompts for the MC/GEN was to design a sixth-grade health curriculum. Since NBPTS had informed candidates of the question ahead of time, savvy candidates brought entire health curriculum guides to use during the exam.)

Once the arduous summer day at the assessment center is over, the candidate awaits a decision from NBPTS, which will be issued in November.

How Entries are Scored

To evaluate the portfolios, the Board hires "assessors"—current classroom teachers with at least three years of experience—who assess certificate areas in which they are certified themselves. For example, someone who is state-certified in Early Childhood Education would score candidates applying for board certification as Early Childhood/Generalist. If a teacher is interested in earning $100 per day for summer employment as an assessor and meets these criteria, she is virtually guaranteed an invitation to the summer scoring sessions, which are held in six different places around the country. Each session lasts three to four weeks with five days of training at the beginning. The first four days of training are devoted to anti-bias training (to prevent an assessor from scoring a candidate down for inappropriate factors) and preparation in the scoring method. One day is reserved for mock scoring to make sure the assessor's ratings are "on target" before she proceeds to "live scoring," i.e., judging actual candidates' portfolios.

"The history of the National Board was that it was run by good teachers who believed in constructivist practice—that we create our own meaning."

After spending four days uncovering their biases and deconstructing their concepts of good teaching, as well as learning the ins and outs of NBPTS scoring rubrics, assessors are assigned to a room where they will score just one type of entry in one certificate area. For example, the assessor scoring for the Middle Childhood/Generalist certificate will be assigned to a single category, such as Entry 3.

Each year the scoring system and assessor training have altered somewhat as researchers for the Board have sought to improve inter-rater reliability, that is, the consistency of scores that different assessors assign. An NBPTS staff member at the February 1999 Scoring Institute explained one difficulty with the scoring process like this: "The history of the National Board was that it was run by good teachers who believed in constructivist practice—that we create our own meaning. Initially, training [for the assessors] was a discovery learning center. Everything was up for grabs; it was chaos." Therefore, NBPTS staff regrouped and decided to train assessors about "one right way" to score candidates, while insisting that, "there is not one right answer for the candidate."

The one right way to score led to development of a scoring system that uses rubrics, guiding questions, and scoring paths (a list of instructions about how to score). Scores range from 1 to 4, with 3 or 4 considered a "pass." The scoring rubrics are dense paragraphs that explain what each numerical score indicates.,During the Scoring Institute seminar, leaders asked attendees to identify "buzz phrases" from these paragraphs. For example, the level 4 performance provides "clear, consistent and convincing evidence" that the teachers further the students' learning and the teachers use "rich and varied assignments" and are able to reflect on their past teaching.[23] Level 3 performance, by contrast, provides only "clear evidence" and "varied assignments."[24]

Each candidate will have twenty people—or more—reviewing and assessing her application. This helps to explain the Board's high costs.

Once the assessors have become comfortable with the rubrics, they are given cases on which to practice scoring. The training staff gives them cases that the Board has judged "dead-on" 3s and 4s to determine how well an individual assessor can identify the more obvious cases. Next, assessors are given less obvious cases but ones that are supposed to come within 1.25 points of the score the Board has determined. To ensure that assessors are grading correctly, National Board uses its version of quality control called "read behind," a procedure in which trainers—advanced assessors—pull cases at random and score them to see if their scores agree with the assessors. Trainers also "read behind" assessors whose scores are not yet "on target" despite all the training, and those who consistently score low or high.

In live scoring, two assessors grade each entry to ensure that the scores are fair. If their ratings deviate by more than 1.25 points, then the trainer reads the case and scores it. The scores are then reported through "automatic adjudication." By this policy, if the three scores are within two points on the scale, they're averaged, with the trainer's score counting twice. If the three scores do not fall within two points, the trainer's score prevails. Considering that ten entries (the six portfolios and four assessment center exercises) are appraised in this way, each candidate will have twenty people—or more—reviewing and assessing her application. This helps to explain the Board's high costs.

Who Passes?

In November, NBPTS votes on and then announces the candidates who have met its standards. To date, according to Valerie French, the head of scoring and assessment for the Board, about 45 to 50 percent of all candidates, across the years and the certificate areas, have achieved certification.

French declined to provide more specific numbers. At the Scoring Institute, she deflected this question and instead highlighted the Board's new policy for people who fail to certify. In years past, those who wanted to try again had to pay the $2,000 application fee a second time and redo all ten entries. The Board now allows the candidates to "bank" their scores for three years and redo certain entries (or retake certain assessment center tests) for $275 each.

The banking policy, initiated in 1996-97, has been popular. According to French, half of those who do not achieve certification in the first attempt will later pass. Thus, 75 percent of all applicants could potentially achieve certification. The Board also has an appeals process, but few people use it now that they can avail themselves of the banking process.

For those who achieve certification, numerous opportunities and rewards await. Thirteen states have passed legislation to award salary bonuses to NBCTs. North Carolina offers a 12 percent annual salary increase for the life of the certificate. (One presumes that means for as long as a teacher is in the classroom since the certificate is good for ten years and renewable upon expiration.) Some districts have established their own salary incentives for NBCTs. National Board certification in some states allows teachers to waive other requirements for relicensing. For example, in Florida, an NBCT need not take continuing education courses; she can merely present her National Board certificate in order to recertify in the state.

NBCTs report that other opportunities are given to them because of their new status. These include teaching at the college level, testifying before state legislatures, and mentoring new teachers. A handful of NBCTs collaborated with A&E cable network to produce six episodes of "Biography." Clearly, NBPTS certification is a boon to an individual who receives it. The question that remains is whether such certification is a true boon for U.S. teacher quality, student progress, and the public at large.

Scoring the National Board

The National Board has indisputably established itself as a powerful voice in the debate about teacher quality. Its claims, if true, would certainly warrant considerable influence. It purports to offer definitive standards for good teaching in nearly every field. Moreover, the Board claims it is able to identify teachers who are highly accomplished. That would be no minor achievement. How real is it?

For an organization dedicated to evaluation, the National Board has been surprisingly free from rigorous evaluations of its own activities and processes. Yet a number of issues deserve close scrutiny: the quality of the Board's standards, the validity of its scoring system, the rationale for federal funding, the objectivity of research on the

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Board's effectiveness, the Board's ties to the teacher unions, and its connections with state policymakers and teacher-training institutions.

I. Standards

Research or Blind Faith?

The National Board has taken on the daunting task of promulgating definitive standards for accomplished teaching in thirty-three different certificate areas. Defining standards in education has been notoriously contentious. Witness the uproar in California that followed implementation of the National Council of Teachers of Mathematics standards. Chuck Cascio, NBPTS Vice President for Certification, Standards and Professional Development is confident that the Board's standards have received the highest levels of scrutiny and represent a professional consensus. This confidence, however, appears to stem primarily from his trust in the people who make up the standards committees. Cascio noted that all of these committees have leading researchers—university professors well known in their fields (most often in teacher education)—as well as successful teachers. Although the standards committees do not themselves prepare any research to back up the assumptions embedded in their standards, Cascio argues that the professors on the committee use their knowledge of their field to guide the standard-setting process. Furthermore, Cascio said that, while the committees' standards are not based on empirical research, they are based on the "experiential research" of the teachers who serve on the committee. He is referring to teachers' personal knowledge of what works well in their classrooms.

The committee's top priority was on generating standards that "speak to highly accomplished teachers" and that related to what "teachers practice, talk about, and experience."

Sharon Fieman-Nemser, Professor of Early Childhood Education at Michigan State University and a member of the Middle Childhood/Generalist standards committee, confirmed Cascio's description of how the standards are determined. When asked if the committee sought to research whether or not its standards correlate with student academic progress, Fieman-Nemser explained that they "did not have the time to do so and this was also not the committee's priority." Rather, "people told good stories about teaching. We listened to each other." The committee's top priority was on generating standards that "speak to highly accomplished teachers" and that related to what "teachers practice, talk about, and experience."

Basing standards on teachers' personal opinions of what is good practice rather than academic research seems problematic. In defining these standards, the committees and, in turn, the NBPTS itself, have supplied no evidence that they correlate with student learning. Furthermore, it is likely that the way in which the standard-setters are selected will lead to a predictable set of criteria. The board of directors selects the committee members, resulting in an incestuous process involving like-minded persons. Instead of looking at the research base of what underlies good teaching, the committee members work mostly from their gut feelings, and when there is a vacancy someone else with similar gut feelings is most apt to be chosen.

Content or Pedagogy?

NBPTS materials and representatives emphasize how unique the Board is because it stresses rewarding teachers for their practice. Hence, pedagogical knowledge is emphasized as the most important quality that a teacher possesses. Although French, Vice President for Assessment Development, insists that a balance is sought between a teacher's subject knowledge and pedagogical knowledge, the Board's actual standards suggest otherwise. For example, the Middle Childhood/Generalist (MC/GEN) certificate has eleven standards, only one of which focuses on content: Standard II: Knowledge of Content and Curriculum.[25] And, even this standard is obscured by pedagogy, making it difficult to discern just what is the level of content knowledge a highly accomplished teacher would need to possess—or how this would be demonstrated. "Having a firm foundation of the conceptual and procedural knowledge in the subjects that comprise the curriculum . . . is essential," reads Standard II in the NBPTS MC/GEN document. Yet, after a cursory mention of the significance of subject knowledge, specifics vanish and the preponderance of the forty-four-page document is focused on pedagogical knowledge.

In the MC/GEN standards document under the topic of science, candidates are told that accomplished teachers should "draw on their knowledge of fundamental ideas and concepts in earth and space science, the life sciences and the physical sciences."[26] But the document goes no deeper than this peripheral comment about teachers' content knowledge. Instead, it emphasizes the way a teacher teaches. Here, NBPTS has a particular type of teaching in mind. Some examples help illuminate this:

- Teachers further personalize science through "hands-on" activities and independent study of important issues and themes. This student-centered learning approach helps students develop a stronger understanding of the concepts and processes taught.
- Exemplary teachers humanize the study of science" by telling stories about scientists and "their doubts and struggles in coming to understand an area of science.[27]

Whether or not these methods are essential is debatable. Humanizing science may work to interest some students. However, is doing so really an indicator of an "exemplary teacher?" What about the importance of the teacher having demonstrated mastery of the scientific disciplines?

This tendency to de-emphasize content knowledge is not confined to the MC/GEN certificate. The Adolescence and Young Adulthood/Social Studies-History certificate again devotes only one of its twelve standards to teachers' knowledge of subject matter. Although this document devotes more space than most to content (for example, by identifying precise historical periods a teacher should know) the majority of the document concerns itself with how teachers conduct themselves. For example:

- They frequently arrange students in heterogeneous small groups to bring pupils from different backgrounds into contact with one another.[28]
- They, also, engage their students in assessing the work of their peers, which can provide them with fresh perspectives.[29]

Not only are the standards promoting questionable pedagogical approaches, they often deteriorate into vague language such as the following:

- They [accomplished teachers] are aware that there are better and worse ways to offer encouragement and constructive criticism.[30]

The Adolescence and Young Adulthood/Mathematics standards document devotes one of eleven standards to teacher content knowledge. Standard III: Knowledge of Mathematics advises that teachers "have a broad and deep knowledge of the concepts, principles, techniques and reasoning methods of mathematics."[31] Yet, a close reading of the standards show them to be vague about mathematics itself, describing it as a "'science of patterns,' [dealing] with a wide range of patterns from all aspects of scientific, technical and practical work."[32]

Lawrence Braden and Ralph Raimi, two math experts who completed a comprehensive study of state math standards in March 1998, examined the NBPTS Adolescence and Young Adulthood/Mathematics standards and concluded that they do not place enough emphasis on proven methods for teaching mathematics. Braden commented, "Words such as 'proof,' 'lecture,' 'hard work,' 'drill,' 'mastery of material' are not mentioned at all or they are denigrated."[33] Raimi noted various content oversights, such as long division— which he describes as the "capstone to decimal notation" — and a lack of specificity when it comes to geometry and algebra. Both Braden and Raimi remarked that they were surprised at how much attention the standards devote to the ways in which teachers should interact with students and even to matters such as exhorting teachers to include different cultural approaches to mathematics.

This lack of emphasis on content knowledge among master teachers is alarming in an age when we cannot assume that teachers have studied their subjects in depth.

The Board has clearly prioritized a particular teaching style—one that is inclusive and learner-centered—at the expense of a rigorous assessment of teachers' substantive expertise in their subject field. A teacher with little knowledge of her field might then have sufficient insight into children's psychology, sufficient classroom presence, and sufficient deference to multicultural ideology to score a high average grade and become certified as a superior teacher.

This lack of emphasis on content knowledge among master teachers is alarming in an age when we cannot assume that teachers have studied their subjects in depth. Much academic research has shown the importance of teachers' content knowledge. Economists Dan Goldhaber and Dominic Brewer found this especially true in math and science: pupils of teachers with a B.A. in math or science (not math education or science education) performed significantly better academically in these subjects.[34] Teachers' troubling lack of content knowledge also surfaced in a recent federal study that found only 38 percent of public schools teachers have a degree in *any* academic subject; the rest majored in some branch of education.[35] "You can't teach what you don't know," Michael Poliakoff, Pennsylvania's Deputy Secretary of Education, says, quoting a summary of the problem offered by the Education Trust's Kati Haycock.

The Board never addresses whether or not its knowledge base is well supported by rigorous research.

Since the Board does not ask candidates to demonstrate their content knowledge as a prerequisite, it seems important that the Board insists that they demonstrate it through a rigorous examination. Yet, as we will see, knowledge of academic content is also de-emphasized in the assessment process itself.

The Board's Pedagogical Assumptions

NBPTS certification rests on the assumption that teaching is a complex act that requires specialized knowledge about pedagogy. Because the Board believes in the preeminent importance of this special knowledge, it is not surprising that the Board emphasizes pedagogical knowledge in its standards and assessment portfolios. In its policy statement, "What Teachers Should Know and Be Able To Do," NBPTS declared, "[teachers'] choices are anchored in their own experience and in the settled ground of the knowledge base that defines both efficacious and flawed practice."[36] NBPTS points to mastery of this "knowledge base" as evidence that a teacher is a true professional: "Chief among the [attributes characterizing professions] are a body of specialized, expert knowledge together with a code of ethics emphasizing service to clients," according to an NBPTS policy statement.[37]

The National Board, through its standards and assessments, is a powerful vehicle for promoting this knowledge base. Linda Darling-Hammond, Stanford education professor and strong proponent of NBPTS, points to the example of medicine to support the Board's approach:

> The way in which medicine, for example, ensures that new research knowledge actually gets used is by including it on medical licensing examinations and specialty board examinations and in accreditation guidelines to which professional schools and hospitals must respond. In education, however, teachers

> examinations have reflected little of what might be called a knowledge base for teaching.[38]

National Board standards and assessments aim to change this trend in education. Although Darling-Hammond suggests parallels between NBPTS's ability to disseminate new research and that of medical specialty boards, the analogy falters when one compares the research backing medical board certification and the meager research guiding NBPTS assessment.

The Board never addresses whether or not its knowledge base is well supported by rigorous research. Indeed, Bonnie Grossen, University of Oregon research professor, notes, "Teaching procedures are often widely disseminated without any evidence that they work."[39] Other professions, continues Grossen, use the scientific method to "ensure to some extent that the procedures shared across the profession actually work to increase the success of all members of the profession."[40] Most research into professional practices, such as medical treatments, goes through three stages: (1) generate a new hypothesis about a treatment or therapy based on informal observations; (2) test the hypothesis by formally trying to disprove it, and (3), when the hypothesis holds, replicate the experiment in a large scale study, complete with random assignment and a control group. In education, on the other hand, new procedures are widely shared across the profession with only Level 1 support. Someone generates a theory about a new instructional strategy that might (or might not) be better than an old one and then finds, as Grossen suggests, "access to a powerful means for dissemination, and that procedure quickly becomes a fad widely disseminated without any further testing of the hypothesis."[41]

Grossen's critique seems to describe accurately the way in which the National Board developed its standards and the pedagogical style that it advances. The standards committees generated theories about what constitutes good teaching and then disseminated them with no rigorous evaluation of their efficacy. A closer look at the Board's standards and assessment methods also reveals that they are highly supportive of constructivist pedagogy, a theory that assumes only "constructed knowledge—knowledge which one finds out for one's self—is truly integrated and understood."[42] Despite a lack of research to support this approach to appraising teacher effectiveness, NBPTS encourages it.[43] This is apt to pose a dilemma for states that have worked hard to overturn constructivist methods and return the focus to content knowledge, as California recently did in reading and math. Such a state may find itself in a strange contradiction, stressing content in its standards for children while supporting an organization that ordains master teachers by de-emphasizing the very same thing.

The Board encourages teachers to provide "multiple paths to knowledge" in ways redolent of Howard Gardner's multiple intelligence theory.

The Board encourages teachers to provide "multiple paths to knowledge" in ways redolent of Howard Gardner's multiple intelligence (M.I.) theory. Without citing

Gardner by name, the various standards allude to his theory by suggesting that teachers give students "multiple opportunities to express their understanding and succeed, by raising their level of self-confidence, and by deepening their grasp of topics and skills studied."[44] While the standards do not explicitly identify Gardner's theory, discussion at the Scoring Institute made clear that teachers generally perceive the Board as endorsing it. Praise for stressing multiple intelligence theory went unchecked by Board staff leading the Institute.

As a matter of principle, the Board does not examine teachers with objective measures.

It may be well and good for a teacher to demonstrate a concept to her pupils in several different ways, perhaps reading about it, graphing it, and creating a timeline about it. Yet too much emphasis on creating multiple paths may prevent a teacher from ensuring that her students have mastered enough of the basic content itself. Journalist James Traub comments in an article about multiple intelligence theory that "most people who study intelligence view M.I. theory as rhetoric rather than science."[45] Steven Ceci, a developmental psychologist at Cornell, explains that Gardner's view "provides no hard evidence—test results, for example—that his colleagues could evaluate."[46] At this point, M.I. remains a theory that is widely accepted among educators despite the paucity of serious scientific research to substantiate it. This theory doubtless remains popular because it allows teachers to be more egalitarian in praising their students for their intelligence(s). ("Academic intelligence is no more valid than kinesthetic intelligence.") It is unfortunate that NBPTS has embraced yet another education strategy that, while popular, bears no demonstrated connection to improved pupil performance.

Although Cascio insists that "there is nothing in the standards report that says [NBPTS] advances one particular pedagogy," a close examination of the standards and the types of activities teachers have to perform indicates otherwise. The problems outlined above suggest that the Board's professional teaching standards are, at bottom, unconnected to hard evidence that they correlate with successful teaching. The Board's enchantment with today's regnant educational orthodoxies has left it with vague, therapeutic standards and a subjective assessment process that do not inspire confidence in its imprimatur.

II. Scoring Process

Similar problems affect the scoring process. Although NBPTS has invested much time and money in developing a scoring system that it says is fair and accurate, questions of validity and reliability still bedevil that system.

Content

Just as content knowledge ranks low in the Board's standards, it also draws little emphasis in the assessment exercises. As a matter of principle, the Board does not examine teachers with objective measures. Valerie French explained that "[w]e all know tests don't and can't measure teacher pedagogical knowledge." She also said that objective tests can only measure breadth of knowledge, not its depth—a statement that can be applied to some objective tests, but not all. Instead, assessors are asked to evaluate a teacher's content knowledge by closely reading her reflective commentaries. However, candidates select what they submit and the proliferation of support groups for Board candidates and Internet discussion groups devoted to assessing the Board's tests diminish the likelihood that the portfolios represent only the candidate's work. Thus, there is no guarantee that what the Board sees is truly reflective of the candidate's ability and knowledge. As more candidates apply for certification, the possibility of cheating also increases.

The Board's disinterest in teachers' content knowledge signals to the profession that there is no need to stress content knowledge for pupils either. At the Scoring Institute in D.C., two fourth-grade teachers' portfolios for the writing assignment were shared to demonstrate what should be considered passing scores of 3 and 4. In the example that represented a 3, the teacher did not give her students grades; instead she gave them comments on their final drafts. In the example that earned a 4, the teacher invited the students to assign themselves grades. As the teacher explained in her commentary, in the name of self-esteem building, she consented to give "Ben" the A he claimed to deserve despite numerous spelling errors and unanswered questions posed by the teacher. Is this the best way to teach kids how to write, or to know whether they are learning Standard English? Yet Board staff lauded these examples because the teachers relied on peer editing and student self-discovery. We may well wonder just what the student discovered. We may also wonder how assessors can judge a teacher's own content knowledge from these submissions. The only criterion that the Board appears to be evaluating is how well a teacher can justify *why* she did something. Identifying someone as being good at justifying her actions is not the same as identifying someone as being an effective teacher. The Board seems to have confused the two.

The possibility of cheating may also pose a problem.

The Board points to the assessment center exercises as the chief opportunity to test teachers directly on their content knowledge. Yet these exercises are uneven. For example, the exercises for the Middle Childhood/Generalist (MC/GEN) certificate never directly test the candidate on content knowledge. Instead, the four questions ask teachers to plan lessons in light of particular goals and assumptions or to diagnose the status of student learning. Moreover, the questions—or topics very close to the actual questions—are sent ahead of time, so teachers can prepare responses. One MC/GEN certified teacher reassured candidates on the NBPTS website, "Don't sweat the Assessment Center! The exercises are practically given to you this year."[47] On the other hand, the assessment center exercises for the Adolescence and Young Adulthood/Science (AYA/Science) certificate directly question the candidate on her knowledge of science. Diane Walker, a Florida teacher certified in AYA/Science, related that she answered four tough questions just about science: two very specific questions about biological systems, one about chemistry, and one about ecology. Valerie French of NBPTS explained that some fields lend themselves to more content-based questions. The danger in accepting that assumption is that assessment exercises for other fields will be less challenging, at least in terms of their content knowledge.

Although the Board claims not to favor any one particular pedagogy, the portfolio entries suggest otherwise.

The possibility of cheating may also pose a problem. Just as teachers can easily share portfolio entries with one another, the availability of multiple test dates for the assessment centers makes sharing the questions with other candidates a real possibility. In early 1999, a naive candidate posted this question on the NBPTS website: "Has anyone taken the assessment center exercises yet for early childhood? If you have are you able to tell others what strand of math the question is about?"[48] Though this person was quickly chastised by other Board candidates, we can have little confidence that discussions about the assessment center exercises don't occur. Rather, it happens in a more discreet fashion. At this point, the Board offers the same assessment center questions for each test date, despite this very real possibility of cheating—surely a practice that calls into question the validity of the assessment process.

Subjective Assessments

The constructivist pedagogy that permeates the standards is reinforced in the portfolio entries and assessment center exercises. Although the Board claims not to favor any one particular pedagogy, the portfolio entries suggest otherwise.

NBPTS boasts that the objectivity of its assessment process is guaranteed by its anti-bias training. At the February Scoring Institute, attendees had a taste of the anti-bias exercises. During the two days, everyone participates in four anti-bias activities, although real assessors "go much more deeply" into their personal biases, according to NBPTS staff. Scoring Institute staff admonish the roomful of educators to "accept as a presumption that we all have biases." The Institute's leader instructed the group to examine their personal concepts of "competence and incompetence." After sharing with one another their disdain for teachers who "line their students up in rows" or who "believe in only one right answer," attendees were advised to purge themselves of these personal biases. Three other exercises are meant to help attendees see how well trained assessors are to suppress any "personal biases" during the scoring process. From these exercises, assessors develop a list of "personal biases" that they keep on hand while assessing. For example, one person acknowledged a bias against "U.S.-centrism," so this might become part of her very own "hit list." Assessors read these lists before scoring each entry, in the hopes that they will remind themselves of the evil of condemning a teacher for being a "U. S. centrist," for example.

> *It is curious that an organization dedicated to highly accomplished teaching would set such low standards for teacher literacy.*

The two panelists leading the Scoring Institute frequently reminded the group to avoid condemning a teacher for "one fatal flaw: misinformation." Apparently, if someone makes a content error, assessors are asked to overlook it lest they—amazingly—be biased against error itself. When probed on this point, Thompson, the ETS consultant, replied: "If the entire lesson is blatantly wrong, we would count that against the person, but errors about people's names, dates, formulas, or writing shouldn't count against the person." A few of the teachers attending the Institute worried that the National Board would favor teachers who are good writers, which, in their opinion might rule out good teachers who write poorly. A teacher from Los Angeles asked, "What about a candidate whose writing is all over the map—the prompt is so full of errors that you have to wonder what kind of teacher is this?" In response, Board-certified art teacher Karen Price, who has a year-long fellowship at ETS to help lead these scoring sessions, responded, "Well, the writing is not counted. We're just looking for substance. For teachers, writing is just not their strength."

It is curious that an organization dedicated to highly accomplished teaching would set such low standards for teacher literacy. Is the Board suggesting that the public should simply accept that writing is not a teacher's strong point—even an English teacher's—and ignore quality (or the absence thereof) in this area? It seems the National Board would be in an ideal position to raise the bar and challenge teachers to improve their writing rather than stipulate that teachers are not writers. De-emphasizing writing ability and downplaying content errors seem to run counter to the Board's claim that it has identified teachers who are truly superior.

As would be expected, the portfolio entries submitted by teachers parallel the standards, and their reliance on a constructivist philosophy does, too. Indeed, the entries are structured in such a way as to favor the constructivist. A candidate is rewarded for having her students work in groups and avoiding a teacher-centered classroom. The teacher who would like to demonstrate her students' knowledge through recitations of Homer or by completing geometric proofs on the chalkboard is deterred from this approach. For all the Board's emphasis on anti-bias training, its constructivist bias is firmly entrenched—yet to be deconstructed or even acknowledged.

Time and Money

The National Board favors teachers who have the personal and professional means to prepare its time-consuming portfolios. Candidates agree that applying for certification requires a substantial time commitment. They say they spend 200 to 800 hours completing the six portfolios. One candidate said she felt as if she had two full time jobs—full time teacher and full time candidate She would wake daily at 5:00 a.m. in order to work on her commentaries before school and then work each night as well.

Because the videotaped exercises are supposed to be unedited, fifteen- and twenty-minute-long pieces, these might appear to be rather simple exercises to prepare. Yet discussions with NBCTs make clear that this is an arduous and sometimes costly practice. Marnie Thompson, a Scoring Institute panelist, noted that teachers generally have five or six opportunities to film themselves before selecting fifteen consecutive minutes of tape. But what if one's school doesn't have video equipment or the equipment is faulty? Margaret Johnson's response was to purchase her own video camera for $1000. Having not achieved certification with her first attempt, she learned on the second try that her videotaping needed to improve. Her husband took off from work—fortunately, he runs his own business—to tape her class. Finally, she had nine hours of tape from which to choose her fifteen- and twenty-minute segments.

Learning the ins and outs of videotaping, Johnson concluded, "is something I do not need to know how to do to be a good teacher." Moreover, she noted, there is "not support in the school systems for these kinds of resources." Matthews also used a personal camera, filming his class for two weeks to get the kids accustomed to it. Realizing that the sound didn't work well, he requested help from the district's communications program. Matthews led the class with a cordless mike while a professional cameraman filmed the proceedings of the class. Of course, as Matthews noted, not every district has these sorts of resources.

> *"Applying to be recognized as an accomplished teacher was undermining my teaching practice this year."*

Despite complaints from candidates, the Board maintains that these performance-based standards—especially the videotaped entries—are the only way that the Board can see the candidates in action. Though these exercises may be time-consuming and costly, Thompson noted that, short of having assessors entering candidates' classrooms, this is the best method for evaluating the teachers' practice.

Yet Roger Marshall, a 1999 candidate, detected a paradox in the process. Having invested over 300 hours preparing his portfolio and $2,600 of his own money (he'll be partly reimbursed by the local teachers' union), he realized late in the process that he was shortchanging his students. "Applying to be recognized as an accomplished teacher was undermining my teaching practice this year." This paradox was especially painful for Marshall because seventeen of his twenty-five students are bilingual and five have special needs. NBPTS would like board certification to be an option that is equally available to all teachers, but realistically the time commitment and out-of-pocket expenses put it out of the reach of many potential candidates. Marshall's example indicates that the burdensome certification process can actually diminish a teacher's performance.

Peer Review

NBPTS operates on the assumption that the mark of true professionalism is peer review. Peer review, the process by which educators judge one another, is also characteristic of the "new unionism" that Bob Chase and the NEA promote.[49] The National Board's dedication to hiring teachers as assessors is emblematic of this new view. It assumes that no other group, such as principals or local administrators, can gauge successful teaching. It further assumes that good teachers cannot be identified by charting their students' academic progress over time. There is the assumption that only teachers are skillful at identifying highly accomplished teachers, despite little or no real evidence that they are better than any other group at evaluating teachers.

Banking Policy

As of 1996-97, candidates who failed could bank their scores and retake exercises as needed. The portfolio entries would be the same—of course, the class of students would not be—but the assessment center exercises would be different. This policy has interesting implications. Half of those who bank their scores achieve certification over the three years they have to try, making the overall success rate for Board certification potentially as high as 75 percent. A banking policy may invite manipulation. Candidates can now choose not to complete some entries and wait until the following year to submit them, or choose to focus their attention on only a few of the entries and turn in poor examples for others, knowing they can try again the following year.

III. Government Entanglements

To date, the federal government has appropriated over $70 million to the Board. According to Sally Mernissi, NBPTS Vice President for Governmental Affairs, the Board expects to be self-sustaining by 2001 through reliance on application fees.[50] It should be noted, however, that the Board made a similar claim when it received its first federal appropriation ten years ago.[51]

The Board's tendency to prolong its dependency on the federal government raises the question of whether and on what conditions Washington should support this endeavor. NBPTS initially justified federal funding as an important subsidy to help it conduct research and develop its certificates before it had any cash flow or applicants. It's interesting to note, however, that no other professional organization, such as medical specialty boards, have needed federal dollars to launch their organizations. After ten years of funding, Congress may fairly ask whether the NBPTS process supports larger national goals for teacher quality and whether it actually does what it promises: identify highly accomplished teachers.

The Board has not kept its promise to seek rigorous, outside reviews of its performance.

When the Board first received federal dollars, it created a unique relationship whereby it would get funding from the U.S. Department of Education but the Department would exercise no oversight authority. The Board claimed that it needed its autonomy in order to avoid being politically influenced. Still, the Board pledged "to submit reports to Congress every year, have its accounts audited, and have its spending of federal funds audited by the General Accounting Office."[52] Ten years later, the Board has not kept its promise to seek rigorous, outside reviews of its performance. The GAO has never audited the Board. In truth, the Secretary of Education acts merely as a cashier. He has no authority to hold NBPTS accountable for the wisdom and effectiveness of its practices.

At the state level, embracing the Board allows policymakers to sidestep the sticky issue of merit pay while appeasing voters and teachers with some type of differentiated pay for good teachers. When these salary incentives are reserved for Board-certified teachers, NBPTS wields a monopoly on determining who is a good teacher. Is this good public policy? What about the teacher who does not want to take time away from her students to go through the time-consuming certification process, but is nonetheless a great teacher as demonstrated by her pupils' high levels of learning year in and year out? She may get words of thanks from some students and parents, but she will not see additional compensation.

Although its monopoly status is undeniably a boon for the Board, it also poses a problem. As the Board gains more exposure and financial support in the states, the number of applicants will dramatically increase; witness 1999's bumper crop of more than 7,700 applicants. Up to this point, Board-certified teachers may have been good teachers, but that could easily be due to self-selection. The quality of the assessment system will come under greater scrutiny for its consistency in identifying accomplished teachers as the number of candidates soar. Writing in *Education Week*, economists Michael Podgursky and Dale Ballou point out that "if the cost of applying is low and there is a modest probability of success, many less-than-outstanding teachers are going to seek out national board certification."[53] The process is "apt to become routinized and standardized."[54] They then asked, "How well will the board discriminate when thousands of applicants seek certification through a bureaucratized system? No one knows."[55] Cheri Yecke, Virginia's Deputy Secretary of Education, raises another question: How will states provide salary incentives once the number of board-certified teachers expands? It's a financial time-bomb.[56]

The Board has made little effort to link its credentialing process to gains in pupil achievement.

When Virginia was considering granting salary bonuses to NBCTs, Yecke conducted a longitudinal fiscal impact study for the state. She discovered that, when states offer National Board salary bonuses, the numbers of NBPTS applicants increases dramatically. In Florida, the growth rate was over 1,000 percent and in Mississippi it was over 800 percent. Using these growth models, Yecke determined that Virginia, which has only twenty-eight NBCTs now, could have between 800–10,000 NBCTs by 2003-04, costing the state anywhere from $3 million to $33 million under proposed legislation for salary bonuses. Yecke, knowing the legislature's hesitancy to fund bonuses up to this level, informed legislators that it is unfair "to dangle this carrot in front of teachers when there is no guarantee it will be funded in the future." Yecke also notes that board certification focuses on input measures that are inconsistent with Virginia's emphasis on student and school results, as evidenced in its Standards of Learning and the tests based on them. Yecke concludes that "teachers whose students show the most improvement on the test should be the ones rewarded," not the NBCTs, since there is no evidence that their students do better academically.

IV. Research on Board Effectiveness

The Board has made little effort to link its credentialing process to gains in pupil achievement—the holy grail of education reform. At this point the Board has no evidence that the teachers it certifies produce superior student achievement or even, for that matter, the kinds of "caring, inclusive, stimulating and safe school communit[ies]" the Board is intent on fostering.

The only study, to date, that looks at the impact of Board certification on student outcomes is seriously flawed, both because the Board paid for the study and because all the researchers have had or continue to have professional ties to the Board. For example, Marnie Thompson is an ETS consultant who is deeply involved in assessor training. As the researchers themselves admit, "the power of the study is limited."[57] Only six teachers were observed. Using classroom observations as their measure, the researchers found "accomplished teachers" among both certified and uncertified groups, and they also found unaccomplished teachers among both groups. Little was learned from this study because the findings were ambiguous and the experimental design had no empirical validity.

The research void may be partially filled by an upcoming study planned by National Partnership for Effectiveness and Accountability in Teaching (NPEAT) and the University of Maryland. With a federal grant to study the Board, a research group under the aegis of NPEAT is supposed to determine "whether teachers who have been certified as outstanding by the National Board for Professional Teaching Standards produce better-educated students."[58] They plan to compare the practices of certified and non-certified teachers; they will also attempt to compare student outcomes.

Like the earlier study, however, this one already suffers from serious problems of interlocking interests. The principal researcher, Ann Harman, is also Senior Executive Associate for Assessment and Research at the National Board itself. She has a built-in objectivity problem. The other researchers employed by NPEAT, Richard M. jaeger and John Hattie, have also worked for the Board in the past. Moreover, NPEAT counts the National Board as one of its *member groups* and has already pledged to disseminate National Board standards and assessment methods across the education community. All these factors suggest that the study's findings will be biased in favor of the Board. The Board is essentially studying itself—or engaging friends and allies to do so, which raises the question, Shouldn't the Board pay for this self-serving research and save federal funds for an independent study?

There are other troubling aspects to this study. Officials at the U.S. Department of Education admit that it is deficient because of a small sample—sixty-five teachers—and one that is limited geographically. Also, the research design calls for a study of various subjective measures of a teacher's practice. The researchers are trying to stay away from measuring student outcomes with standardized test results because the three geographic areas where the teachers are being studied use different tests. Instead, researchers will use structured interviews with teachers, parents, and students, classroom observations, and evaluations of a student writing assignment. These subjective measures of student success, unburdened by objective measures of pupil progress, will still leave the findings questionable. Thus, even after the government funds this endeavor, reliable, independent research will still be required.

Union members represent nearly two-thirds of the Board membership.

V. Union Entanglement

NBPTS trumpets its support from numerous professional education organizations, ranging from the National School Boards Association to the National Council of Teachers of Mathematics.[59] The two most influential groups that support NBPTS and are heavily represented among its directors are the National Education Association (NEA) and American Federation of Teachers (AFT). Nineteen of the Board's directors are NEA members, including the Board's present chair, Barbara Kelley, a physical education teacher from Maine. The AFT has similar numbers on the Board. Thus, union members represent nearly two-thirds of the Board membership.

A number of factors explain this. Since Albert Shanker was instrumental in mobilizing financial and institutional support for the concept of national board certification, it is not surprising that he would also work to ensure that the unions had a strong voice on the board itself. Mary Hatwood Futrell, the former NEA president, also served on the Carnegie Task Force that drafted the bylaws requiring equal representation of the two unions on the Board. The task force determined that forty-two of the Board's sixty-three members would be teachers, most of them public-school teachers who belong to unions. This task force also selected the original board of directors.

Having such a high representation of union members on the Board is a politically astute move for NBPTS. Teachers, who historically have been suspicious of testing and merit pay, are more apt to trust an organization they know to be led and sanctioned by the unions. The NEA assures its members that they can trust NBPTS because the experts behind it are themselves teachers and because "NEA formally supports NBPTS through its resolutions and other policy documents, and considers

National Board certification to be a valuable professional development option for experienced teachers."[60] Union endorsements also impress politicians who are interested in currying favor with the unions. For example, legislators indebted to the teachers' unions are more likely to vote for measures to support the Board, such as salary incentives for Board-certified teachers. The Board clearly benefits from its strong relationship with the unions.

The unions benefit, too. The NEA and AFT are now able to offer their membership two important rewards through Board certification. First, this credential confers new respect, a new professionalism. Second, in places where the Board and the unions have succeeded in arranging this, the unions can offer their members who achieve certification salary bonuses, national license portability, and credits toward license renewal.

Although the relationship between the unions and NBPTS is clearly beneficial to both parties, it does not necessarily boost teacher quality. The NEA/AFT bloc can veto any Board action to which they are opposed and can also push through any policy they regard as important to union interests. In 1990, the NEA encouraged its members on the National Board to "ensure that eligibility is tied to possession of a state teaching license and graduation from an accredited teacher education program."[61] This measure would have eliminated many private school teachers from recognition. It did not pass, but the episode illustrates how much influence the unions and their allies can wield over Board policy. Full-time union leaders have more time to pursue union interests and access to organizational resources that other directors serving pro bono do not have. Also, union leaders have more influence than unaffiliated members in the appointment of other board members and staff.

The key issue is whether such heavy union influence will, in Lieberman's words, "erode the Board's integrity."[62] For instance, if teachers of drivers' education, vocational education, or home economics clamor for certification, the Board would need to address the question of whether these fields possess enough specialized content to justify advanced certification. This could lead to a conflict of interest for the union leaders. Teachers for whom no certification is available will surely allege inequity within the profession. It is unlikely that union leaders can long deny certification to any category of their members; instead, they will presumably seek to broaden the possibility of certification to include all grade levels, subjects, and activities. Indeed, the Board is now debating the merits of a certificate for guidance counselors. But is this really a field that warrants advanced certification by a professional *teaching* board.

Union dynamics will also affect the numbers certified. Since the unions are working in the interests of a large base of teachers, they are inevitably interested in expanding the number of individuals who get certified. If the Board is to be financially self-sustaining, it will need to boost the number of teachers who apply, pay their fees, and get certified. Yet, if it ever meets President Clinton's goal of 100,000 NBCTs, states may reconsider the salary incentives they are offering. Thus far, NBPTS has not acknowledged the probability that salary increments will become less popular in states and districts as more and more teachers are certified and thus rendered eligible for the extra compensation.

> *Fifteen states, by legislative mandate, have established their own teacher licensing boards that have adopted National Board-compatible standards.*

The underlying problem is the fundamental tension between a union dedicated to advancing the economic and professional welfare of all teachers and an organization whose purpose is to identify and reward only the best among them. The only way to ease this tension, Lieberman pointed out, "is to separate control of the National Board from control by teachers unions; unfortunately, union control of the NBPTS has been institutionalized with little prospect of change."[63]

VI. Entanglement with State Policymakers

The National Board is adamant that board certification will remain voluntary, the implication being that no one will have to go through the process unless she chooses. Yet more and more states are overhauling their own teacher licensure processes to reflect the Board's standards and assumptions. This is happening at two levels. First, more than thirty states now belong to the Interstate New Teacher Assessment and Support Consortium (INTASC), a group "working together on 'National Board-compatible' licensing standards and assessments for beginning teachers both before they enter teaching and during their first two years on the job."[64]

Fifteen states, by legislative mandate, have established their own teacher licensing boards that have adopted National Board-compatible standards. For example, North Carolina's Professional Teaching Standards Commission is directed by law to "consider current methods to assess teachers and teaching candidates, including the National Teaching Exam and the assessments of the National Board for Professional Teaching Standards." Its mandate is to recommend to the State Board of Education the implementation of a rigorous assessment method for initial and continuing education.[65] The Commission has drafted and is circulating its recommended standards and assessment methods, which the State Board of Education will vote on in the fall. According to Executive Director Thomas Blanford, these standards and assessment methods are indeed modeled after NBPTS and INTASC. The Commission also endorses the assessment methods adopted by the North Carolina Department of Education. By this plan, teachers will now maintain portfolios of their lesson plans, students' work, and letters to parents as evidence that they're meeting these strict standards. Outside observers—other teachers—will come into schools to monitor teachers' portfolios and professional development plans (PDP). While these portfolios and PDPs may be effective ways for teachers to become more aware of how and why they're teaching, there is no attempt on the State Board's part to tie teacher evaluations to student outcomes. Yet the National Board is eager to help schools and states adopt such standards. NBPTS has staff working on "teacher development."

which, according to Board Vice President Chuck Cascio, "is designed to give every teacher the chance to be challenged to live these performance standards."

The standards and assessments that the Board uses remain unproven and of questionable value.

INTASC, state standards commissions, and the state boards of education and legislatures that have empowered them, seem to have accepted the premise that there is a solid link between National Board standards and assessments and student academic outcomes. This is an example of how an unproven education theory becomes part of the conventional wisdom and spreads across the land. States have the responsibility to license teachers who can demonstrate that they are qualified to instruct children. By turning over the assessment of teachers to professional commissions that have not proven that they employ superior methods for improving student learning, state officials are failing in their civic duty.

Conclusion

There is no doubt that teacher quality must be strengthened if we hope to improve student performance. The National Board for Professional Teaching Standards claims that it has found a way to do this. At first blush, the idea of having a nongovernmental organization promote and reward teachers for meeting rigorous standards sounds wonderful. However, the standards and assessments that the Board uses remain unproven and of questionable value. The Board nevertheless enjoys mounting support across the political spectrum. It is worth recalling that the education system's obligation is to students and their learning. We must take a careful look at the National Board and ask whether or not it is in fact succeeding in meeting this obligation. At this point, most of the evidence suggests that it is not.

Appendix A: NBPTS "The Five Core Propositions"

The Five Propositions of Accomplished Teaching

The National Board for Professional Teaching Standards seeks to identify and recognize teachers who effectively enhance student learning and demonstrate the high level of knowledge, skills, abilities and commitments reflected in the following five core propositions.

1. *Teachers are committed to students and their learning.* Accomplished teachers are dedicated to making knowledge accessible to all students. They act on the belief that all students can learn. They treat students equitably, recognizing the individual differences that distinguish one student from another and taking account of these differences in their practice. They adjust their practice based on observation and knowledge of their students' interests, abilities, skills, knowledge, family circumstances and peer relationships.

   Accomplished teachers understand how students develop and learn. They incorporate the prevailing theories of cognition and intelligence in their practice. They are aware of the influence of context and culture on behavior. They develop students' cognitive capacity and their respect for learning. Equally important, they foster students' self-esteem, motivation, character, civic responsibility and their respect for individual, cultural, religious and racial differences.

2. *Teachers know the subjects they teach and how to teach those subjects to students.* Accomplished teachers have a rich understanding of the subject(s) they teach and appreciate how knowledge in their subject is created, organized, linked to other disciplines and applied to real-world settings. While faithfully representing the collective wisdom of our culture and upholding the value of disciplinary knowledge, they also develop the critical and analytical capacities of their students.

   Accomplished teachers command specialized knowledge of how to convey and reveal subject matter to students. They are aware of the preconceptions and background knowledge that students typically bring to each subject and of strategies and instructional materials that can be of assistance. They understand where difficulties are likely to arise and modify their practice accordingly. Their instructional repertoire allows them to create multiple paths to the subjects they teach, and they are adept at teaching students how to pose and solve their own problems.

3. *Teachers are responsible for managing and monitoring student learning.* Accomplished teachers create, enrich, maintain and alter instructional settings to capture and sustain the interest of their students and to make the most effective use of time. They also are adept at engaging students and adults to

assist their teaching and at enlisting their colleagues' knowledge and expertise to complement their own.

Accomplished teachers command a range of generic instructional techniques, know when each is appropriate and can implement them as needed. They are as aware of ineffectual or damaging practice as they are devoted to elegant practice.

They know how to engage groups of students to ensure a disciplined learning environment, and how to organize instruction to allow the schools' goals for students to be met. They are adept at setting norms for social interaction among students and between students and teachers. They understand how to motivate students to learn and how to maintain their interest even in the face of temporary failure.

Accomplished teachers can assess the progress of individual students as well as that of the class as a whole. They employ multiple methods for measuring student growth and understanding and can clearly explain student performance to parents.

4. *Teachers think systematically about their practice and learn from experience.* Accomplished teachers are models of educated persons, exemplifying the virtues they seek to inspire in students—curiosity, tolerance, honesty, fairness, respect for diversity and appreciation of cultural differences—and the capacities that are prerequisites for intellectual growth: the ability to reason and take multiple perspectives to be creative and take risks, and to adopt an experimental and problem-solving orientation.

   Accomplished teachers draw on their knowledge of human development, subject matter and instruction, and their understanding of their students to make principled judgments about sound practice. Their decisions are not only grounded in the literature, but also in their experience. They engage in lifelong learning which they seek to encourage in their students. Striving to strengthen their teaching, accomplished teachers critically examine their practice, seek to expand their repertoire, deepen their knowledge, sharpen their judgment and adapt their teaching to new findings, ideas and theories.

5. *Teachers are members of learning communities.* Accomplished teachers contribute to the effectiveness of the school by working collaboratively with other professionals on instructional policy, curriculum development and staff development. They can evaluate school progress and the allocation of school resources in light of their understanding of state and local educational objectives. They are knowledgeable about specialized school and community resources that can be engaged for their students' benefit, and are skilled at employing such resources as needed.

> Accomplished teachers find ways to work collaboratively and creatively with parents, engaging them productively in the work of the school.

Cited from *http://www.nbpts.org/nbpts/standards/five-props.html.*

Appendix B: Summaries of the Standards

Framework of National Board Certificates

	Early Childhood Ages 3-8	**Middle Childhood Ages 7-12**	**Early Adolescence Ages 11-15**	**Adolescence and Young Adulthood Ages 14-18+**
Generalist	Currently available	Currently available	Currently available	—
English Language Arts	—	No release date determined	Currently available	Currently available
Mathematics	—	No release date determined	Currently available	Currently available
Science	—	No release date determined	Currently available	Currently available
Socials Studies/History	—	No release date determined	Currently available	Currently available
Art	December 2001		Currently available	
Foreign Language	December 2001		December 2001	
Guidance Counseling	No release date determined		No release date determined	
Library/Media	December 2001		December 2001	
Music	December 2001		December 2001	
Physical Education	December 2001		December 2001	
Health	—		No release date determined	
Vocational Education	—		December 1999*	
English New Language	December 1999*		December 1999*	
Exceptional Needs/Specialist	December 1999*		December 1999*	

* Projected availability date.

Source: National Board for Professional Teaching Standards, *Guide to National Board Certification 1998-1999* (San Antonio, Tex.: Author, 1998), 7.

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[2] Richard W. Riley, U.S. Secretary of Education, "New Challenges, A New Resolve: Moving American Education into the 21st Century," Sixth Annual State of American Education Speech, Long Beach, California, 16 February 1999.

[3] National Board for Professional Teaching Standards, *What Every Teacher Should Know: The National Board Certification Process 1998-99* (Southfield, Mich.: Author, April 1998).

[4] Myron Lieberman, *The Future of Public Education* (Chicago: University of Chicago Press, 1960), especially 259-270.

[5] Task Force on Teaching as a Profession, *A Nation Prepared: Teachers for the 21st Century* (New York: Carnegie Forum on Education and the Economy, May 1986), see especially 66-69. These goals were later adopted by NBPTS and can be found in National Board for Professional Teaching Standards, *What Every Teacher Should Know.*

[6] "Board of Directors" *www.nbpts.org/nbpts/about/board.html*

[7] National Board bylaws, Article II, Section C, 2.a.

[8] Thomas Kean, quoted in Kristin Goldberg, "Teaching Panel's Backers Seek $25 Million in Aid" *Education Week*, 24 February 1988.

[9] Ibid.

[10] From 1991 to 1994, the National Board was funded under the Higher Education Act. From 1995 to 1999, the National Board was funded under Title II: Professional Development of the Elementary and Secondary Education Act.

[11] *www.nbpts.org/nbtps/standards/five-props.html*

[12] *www.nbpts.org/nbpts/standards/how-standards.html*

[13] Gene Geissert and Myron Lieberman, *Teacher Union Bargaining: Policy and Practice*, 209.

[14] Names of NBCTs have been changed to maintain their anonymity.

[15] National Board for Professional Teaching Standards, *Guide to National Board Certification* (Southfield, Mich.: Author, 1998), 11.

[16] "A Closer Look at MC/Generalist Assessment," document provided by the National Board for Professional Teaching Standards at its 22-23 February1999 Scoring Institute.

[17] National Board for Professional Teaching Standards, *Middle Childhood/Generalist Entry 1: "Writing: Thinking Through the Process,"* 4.

[18] National Board for Professional Teaching Standards, *Middle Childhood/Generalist Entry 3: "Building a Classroom Community,"* 1.

[19] "Middle Childhood/Generalist: Standards for National Board Certification," (Southfield, Mich.: National Board for Professional Teaching Standards, January 1996), 33, 35.

[20] *www.nbpts.org*

[21] *www.nbpts.org*

[22] *www.nbpts.org/nbpts/about/candfaq.html*

[23] "Middle Childhood/Generalist Scoring Rubric," provided by the National Board for Professional Teaching Standards at their February 1999 Scoring Institute in Washington, D.C.

[24] Ibid.

[25] "Middle Childhood/Generalist: Standards for National Board Certification," (Southfield, Mich.: National Board for Professional Teaching Standards, January 1996), 17.

[26] "Middle Childhood/Generalist: Standards for National Board Certification," 21.

[27] "Middle Childhood/Generalist: Standards for National Board Certification," 22.

[28] National Board for Professional Teaching Standards, *Social Studies-History Standards (for teachers of students ages 7-18+)* (Southfield, Mich.: Author, 1998), 18.

[29] Ibid, 48.

[30] Ibid, 45.

[31] "Adolescence and Young Adulthood/Mathematics: Standards for National Board Certification, (Southfield, Mich.: National Board for Professional Teaching Standards, November 1996), 19.

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[33] Personal correspondence.

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[38] Linda Darling-Hammond, *Reshaping Teaching Policy, Preparation, and Practice: Influences of the National Board for Professional Teaching Standards* (Washington, D.C.: American Association of Colleges for Teacher Education, 1999), 11.

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[39] Bonnie Grossen, "What Does It Mean To Be A Research-Based Profession?" in *What's Gone Wrong in America's Classrooms?* Williamson Evers, ed. (Stanford University: Hoover Institution Press, 1998), 24.

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[42] E. D. Hirsch, *The Schools We Need and Why We Don't Have Them.* (New York: Doubleday, 1996), 245.

[43] Linda Darling-Hammond, *Reshaping Teaching Policy, Preparation, and Practice.*

[44] National Board for Professional Teaching Standards, "Middle Childhood/Generalist: Standards for Board Certification, 35.

[45] James Traub, "Multiple Intelligence Disorder," *New Republic*, 26 October 1998.

[46] Ibid.

[47] *www.nbpts.org/nbpts/forum*

[48] Ibid

[49] Myron Lieberman, *Teachers Evaluating Teachers: Peer Review and the New Unionism* (New Brunswick, N.J.: Transaction Publishers, 1998); Bob Chase, NEA President has written and spoken much about the "new unionism" that the NEA promotes. One concept that is fundamental to this "new unionism" is that teachers will regulate themselves. Hence, this principle of self-regulation inspires peer review and such endeavors as NBPTS. Links to speeches and policy statements about the "new unionism" are found at *www.nea.org/newunion*.

[50] John R. Phillips and Marci Kanstoroom, "Title II: Does Professional Development Work?", *New Directions: Federal Education Policy in the Twenty-First Century* (Washington, D.C.: Thomas B. Fordham Foundation, 1999), 71.

[51] Kristin Goldberg, "Teacher Panel's Backers Seek $25 Million in Aid," *Education Week*, 24 February 1998.

[52] Ibid.

[53] Dale Ballou and Michael Podgursky, "Some Unanswered Questions Concerning National Board Certification of Teachers," *Education Week*, 10 June 1998.

[54] Ibid.

[55] Ibid.

[56] Personal communication.

[57] John Hattie, Janet Clinton, Marnie Thompson, and Holly Schmidt-Davis, "Identifying 'Highly Accomplished Teachers: A Validation Study," University of North Carolina at Greensboro, December 1995.

[58] Ann Bradley, "Ed. Dept. Funds Large-Scale Research Effort on Teaching," *Education Week*, 29 October 1997.

[59] A complete list of education organizations that have pledged support for the Board can be found at *www.nbpts.org/npbts/about/supporters.html*

[60] "Questions and Answers for educators interested in National Board Certification" NEA website: *www.nea.org/teaching/nbptsqa.html*

[61] Ann Bradley, "N.E.A. Assails Board's Policy on Prerequisites for Certification" *Education Week*, 17 January 1990.

[62] Gene Geirsert and Myron Lieberman, eds., *Teacher Union Bargaining: Policy and Practice*, 219.

[63] Ibid., 221

[64] Linda Darling-Hammond, *Reshaping Teaching Policy, Preparation, and Practice*, 13.

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The National Council for Accreditation of Teacher Education: Whose Standards?

J.E. Stone

The National Council for Accreditation of Teacher Education (NCATE) is the largest accreditor of teacher training programs in the U.S., and its standards are fast becoming the de facto national norm. In addition to being a time-consuming and expensive process, however, NCATE accreditation reviews seem more concerned with a school's philosophical perspective than with the qualifications of its faculty and the knowledge of its graduates. Moreover, NCATE's standards downplay the role of teaching in producing student achievement and celebrate the learner-centered approach to pedagogy. These stances put NCATE at odds with what many parents and policymakers want from teachers and the institutions that claim to prepare them.

Introduction

Practically everyone is calling for better-trained teachers.[1] Failure on a state administered literacy exam by 59 percent of Massachusetts teacher education graduates was a key recent factor in drawing attention to the problem.[2] The 1998 Higher Education Act sent a particularly clear message to the schools of education and state licensing agencies: federal funding in coming years will depend on higher standards for teachers.[3]

Even the teacher-training community seems to agree that improvements are needed. An organization comprised of education and public representatives—the National Commission on Teaching & America's Future (NCTAF)—has been especially energetic in promoting this message. The NCTAF's Executive Director—Stanford education Professor Linda Darling-Hammond—has been making the rounds of state capitals, telling governors and legislators that it's time to "get serious about [teacher-training] standards."[4] By standards, however, the NCTAF means teacher-training standards set by NCATE—the National Council for Accreditation of Teacher Education.[5]

NCATE is the largest accreditor of teacher training programs in the U. S. Its president and others of its leaders are members of NCTAF. NCATE accredits roughly half of America's teacher-training programs and, with notable exceptions—Boston University, for example—all the large ones. Its standards have been adopted in whole or in part by forty-five states. NCATE's standards are fast becoming the de facto national standard. Whether this development favors reform or strengthens the status quo, however, is a question that deserves to be carefully examined.

NCATE's Standards

NCATE was founded in 1954. Its members include all the major organizational stakeholders in teacher training. These include the National Education Association, the American Association of Colleges of Teacher Education, the Council of Chief State School Officers, and similar groups representing school personnel. It also includes subject-specific organizations such as the National Council of Teachers of English and the International Reading Association.

NCATE's standards are fast becoming the de facto national standard.

NCATE reviews teacher education programs using a process that entails institutional self-study followed by campus visitation. An institution's facilities, personnel, and program are examined every five years. Critics have termed it time consuming and expensive. In a number of states, review by NCATE is, in effect, legally mandated. These are states in which the government agency that regulates teacher training and licensure has adopted NCATE's standards as its own.

NCATE's standards are undergoing revision. In fact, they are under continuous revision, as required by the NCATE constitution. The current standards were originally written in 1987, and have since been rewritten and refined several times. They evolved from several older sets of standards that were similarly written and rewritten during the sixties and seventies. Over the past two years, still another rewriting has been underway. This latest round of revisions is due to take effect in 2000.[6] As explained below, these latest revisions—the so called NCATE 2000 standards—are said to be "groundbreaking" in that they will be "performance-based" instead of "curriculum-based."

NCATE's current standards (i.e., its 1987 standards as "refined" in 1995) consist of twenty very general requirements having to do with everything from curriculum to students, faculty, and governance (see Table 1).[7]

The twenty "standards" are very general statements, and each is accompanied by one or more "indicators" intended to convey the type of evidence that would demonstrate compliance with the standard. Technically, the indicators are not the standards, but without the indicators and extensive additional guidance, written and unwritten, the standards would be virtually indecipherable.

Table I NCATE's Current Standards[8]

I. *Design of Professional Education*

Standard I.A Conceptual Framework: The unit [i.e., the university department or college that is responsible for teacher training] has high quality professional education programs that are derived from a conceptual framework(s) that is knowledge-based, articulated, shared, coherent, consistent with the unit and/or institutional mission, and continuously evaluated.

Standard I.B General Studies for Initial Teacher Preparation: The unit ensures that candidates have completed general studies courses and experiences in the liberal arts and sciences and have developed theoretical and practical knowledge.

Standard I.C Content Studies for Initial Teacher Preparation: The unit ensures that teacher candidates attain academic competence in the content that they plan to teach.

Standard I.D Professional and Pedagogical Studies for Initial Teacher Preparation: The unit ensures that teacher candidates acquire and learn to apply the professional and pedagogical knowledge and skills to become competent to work with all students.

Standard I.E Integrative Studies for Initial Teacher Preparation: The unit ensures that teacher candidates can integrate general, content, and professional and pedagogical knowledge to create meaningful learning experiences for all students.

Standard I.F Advanced Professional Studies: The unit ensures that candidates become more competent as teachers or develop competence for other professional roles (e.g., school library media specialist, school psychologist, or principal).

Standard I.G Quality of Instruction: Teaching in the unit is consistent with the conceptual framework(s), reflects knowledge derived from research and sound professional practice, and is of high quality.

Standard I.H Quality of Field Experiences: The unit ensures that field experiences are consistent with the conceptual framework(s), are well-planned and sequenced, and are of high quality.

Standard I.I Professional Community: The unit collaborates with higher education faculty, school personnel and other members of the professional community to design, deliver, and renew effective programs for the preparation of school personnel, and to improve the quality of education in schools.

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II. *Candidates in Professional Education*

Standard II.A Qualifications of Candidates: The unit recruits, admits, and retains candidates who demonstrate potential for professional success in schools.

Standard II.B Composition of Candidates: The unit recruits, admits, and retains a diverse student body.

Standard II.C Monitoring and Advising the Progress of Candidates: The unit systematically monitors and assesses the progress of candidates and ensures that they receive appropriate academic and professional advisement from admission through completion of their professional education programs.

Standard II.D Ensuring the Competence of Candidates: The unit ensures that a candidate's competency to begin his or her professional role in schools is assessed prior to completion of the program and/or recommendation for licensure.

III. *Professional Education Faculty*

Standard III.A Professional Education Faculty Qualifications: The unit ensures that the professional education faculty are teacher scholars who are qualified for their assignments and are actively engaged in the professional community.

Standard III.B Composition of Faculty: The unit recruits, hires, and retains a diverse higher education faculty.

Standard III.C Professional Assignments of Faculty: The unit ensures that policies and assignments allow faculty to be involved effectively in teaching, scholarship, and service.

Standard III.D Professional Development of Faculty: The unit ensures that there are systematic and comprehensive activities to enhance the competence and intellectual vitality of the professional education faculty.

IV. *The Unit for Professional Education*

Standard IV.A Governance and Accountability of the Unit: The unit is clearly identified, operates as a professional community, and has the responsibility, authority, and personnel to develop, administer, evaluate, and revise all professional education programs.

Standard IV.B Resources for Teaching and Scholarship: The unit has adequate resources to support teaching and scholarship by faculty and candidates.

Standard IV.C Resources for Operating the Unit: The unit has sufficient facilities, equipment, and budgetary resources to fulfill its mission and offer quality programs.

For example, "Standard I.A" requires that programs be "derived from a conceptual framework that is knowledge-based, articulated, shared, coherent, and consistent with the unit and/or institutional mission" and indicator "I.A.1" says "The conceptual framework is written, well articulated, and shared among professional education faculty, candidates [i.e., students undergoing teacher training] and other members of the professional community"—still, a rather vague statement.[9]

It isn't until one reads the bullet points under indicator "I.A.1" that the meaning of shared "conceptual framework(s)" begins to emerge: "The framework(s) reflects multicultural and global perspectives which permeate all programs."[10]

However, even this statement is less than transparent. In order to gain a more complete understanding of "multicultural and global perspectives," the reader must consult the glossary and it is there that the real meaning of "Standard I.A" becomes evident:

> Global perspective. The viewpoint that accepts the interdependency of nations and peoples and the interlinkage of political, economic, ecological, and social issues of a transnational and global character.[11]
>
> Multicultural perspective. (1) The social, political, economic, academic, and historical realities experienced by individuals and groups in complex human encounters; (2) the representation and incorporation of issues related to culture, demographics, ethnicity, race, gender, sexual orientation, religion, socioeconomic status, and exceptionalities in the education process; and (3) the inclusion of a cohesive, inclusive curriculum representing the contributions of diverse populations.[12]

An accredited institution's teacher-training curriculum must be infused with a particular sociopolitical perspective.

In other words, NCATE's standard for "high quality professional education programs" turns out to mean, in part, that an accredited institution's teacher-training curriculum must be infused with a particular sociopolitical perspective—a matter well removed from the issue of teacher effectiveness and one that policymakers and the public might well question. Yet, by virtue of NCATE's remarkably circuitous way of spelling out what is actually looked for, "Standard I.A" appears bland and unremarkable.

Determining the true meaning of other NCATE standards requires similar attention to the "fine print" and, in a number of cases, the fine print turns out to be less a matter of pedagogy than one of social and political ideals. For example, "Standard III, A" addresses "Professional Education Faculty Qualifications"—a seemingly straightforward matter . An examination of the indicators, however, reveals NCATE's attention to social and political issues that seem more than a little tangential to faculty qualifications. For example, Indicator III, A, 2 says "Higher education faculty exhibit intellectual vitality in their sensitivity to critical issues (e.g., how content studies and pedagogical studies can be more effectively integrated; and the ethics of equity and diversity in the U. S. culture) and in their efforts to address the issues and become proactive in addressing them."[13] In other words, as a condition of accreditation, teacher-training faculty are expected to adopt and promote an activist viewpoint with regard to equity and diversity issues. Here again, standards that nominally deal with academic or professional matters turn out to mean something quite different when closely examined.

What is clear from these and similar examples is that NCATE's standards are anything but self-evident and, in truth, could be termed misleading. They address matters well removed from questions of effective pedagogy and, as a practical matter, they require extensive informal guidance. Because much of this guidance comes in the form of communications from NCATE's various boards and offices, any true understanding of NCATE's standards must be based on sources of information beyond the standards themselves.

Capturing the Vision *and NCATE's Standards conceive of teaching as an activity concerned as much or more with social reform than with student achievement.*

Happily, for the interested observer, NCATE's standards make reference to just such a source of guidance.[14] Published by the American Association of Colleges of Teacher Education, *Capturing the Vision: Reflections on NCATE's Redesign Five Years After* sets forth the "vision of quality" that guided the development of NCATE's standards.[15] It was written by the parties who interpret and implement the standards, including representatives of NCATE's Board of Examiners, its Unit Accreditation Board, and its Executive Committee. *Capturing the Vision* was written to communicate "the larger purposes of accreditation" to "faculty in the institutions that seek accreditation."[16] It presents what amounts to an ordained interpretation for the NCATE standards that have been in use (in various stages of refinement) from 1987 to the present.

Capturing the Vision's central message is that teacher-training programs must "first and foremost" be "dedicated" to "equity," "diversity," and "social justice"—egalitarian ideals widely approved within the teacher education community.[17] It holds that teachers and administrators are morally obliged to promote social justice, in the same sense that physicians are obliged to promote health and lawyers obliged to seek justice.

Equally noteworthy is what *Capturing the Vision* overlooks. It says nothing about matters that might be thought the core of teaching—namely teaching's role in producing student achievement. For that matter, the standards themselves do not address the issue either. Rather, what *Capturing the Vision* does make clear is that faculty willingness to accept certain sociopolitical views is critical to an institution's efforts to become accredited ". . . we are convinced that units living the three themes will not have difficulty in meeting NCATE's standards."[18] By implication, programs failing to adopt NCATE's views may have difficulty. Plainly, *Capturing the*

Vision and NCATE's Standards conceive of teaching as an activity concerned as much or more with social reform than with student achievement.

Proposed NCATE 2000 Standards

Superficially at least, NCATE's newly proposed "performance-based" standards differ from its current curriculum-based standards.[19] Instead of specifying input indicators of quality—conceptual frameworks, faculty attitudes, etc.—the proposed standards set expectations for the competencies to be displayed by newly minted teachers. They also give some attention to the need for teacher knowledge of subject matter and they acknowledge student learning as the ultimate goal of the teaching endeavor.

Like the current standards, however, the new standards are open to widely differing interpretations and, again like the current standards, they contain repeated references to sociopolitical attitudes and ideals. The terms "diversity," "cultural diversity," and teaching appropriate to "diverse learners" are sprinkled liberally throughout the new "Program Standards for Elementary Teacher Preparation."[20]

Whatever their operative meaning (as may be revealed by some new version of *Capturing the Vision*), the new standards in no way suggest a lessened emphasis on social idealism or any departure from the vision of teacher training expressed in *Capturing the Vision*. Presumably, neither will the proposed standards, once enacted, be any less subject to reinterpretation and "refinement" than were the standards enacted in 1987. As matters stand, the only certain difference between the proposed NCATE 2000 standards and the current standards is that the new ones will attempt to assess program effectiveness by measuring that which recent graduates have learned whereas the standards that have been in use since 1987 assess the curriculum and other aspects of the training program itself.

To parents, schooling is about their hopes for their children, not about social engineering.

Two Views of Teacher Training Reform

The National Commission on Teaching and America's Future has made headlines with its proposals for reforming teacher training—proposals that feature universal adoption of NCATE's standards for teacher-training programs. What policymakers and the public may not understand, however, is that the NCTAF and NCATE have a very different conception of that which needs reforming than do teacher education's critics. They acknowledge that there are too few well-trained teachers but most critics believe there are too many badly trained ones, i.e., teachers who are ill equipped to produce results.[21]

What Parents and Policymakers Want

Few parents and policymakers are opposed to the teacher-education community's passion for education to improve society; they just want the improvements to take place the old fashioned way, i.e., through the intellectual enhancement of students. Unlike NCATE, they want academic matters, not social reform, to be teaching's top priority. They believe that schooling should, first and foremost, equip students with basics such as a broad fund of knowledge, high aspirations for achievement, and a sense of personal responsibility.[22] To parents, schooling is about their hopes for their children, not about social engineering.[23]

Teacher concern for equity, diversity, and social justice need not undermine academic aims, yet it tends to do so when teachers are taught that social ideals should take precedence over learning. For example, when teachers choose to promote failing students, they foster a spurious form of equity while undermining academic standards. Much the same holds true when they use teaching strategies such as "cooperative learning" and grading based on group projects.[24] These methods lessen individual accountability by blurring observable differences in student performance. In contrast to educators, parents and policymakers are less concerned about minimizing differences and more concerned about each child becoming all he/she can become.

Social promotion policies and cooperative learning are familiar examples of education practices that make academic concessions to social concerns. Many less well-known methodologies called "best practices" are founded on the same priorities.[25] They include heterogeneous grouping, multi-age classes, and a variety of other teaching, curricular, and organizational stratagems. All subordinate educational outcomes to social aims.[26]

Teachers and administrators are not only taught priorities that are at odds with those of the public, they are also given to believe that the public's ideas about education are unenlightened, even harmful. A recent *Education Week* essay by a veteran high-school principal reflected the prevailing view.[27] According to Principal Jones, "parents expect that their children will be educated just like they were." In his view, the adoption of traditional education practices—academic retention, for example—is a wrongful concession to the public's ideas. Jones lamented the failure of the 1960s student movement to reshape lastingly the public's thinking and suggested that school administrators push the envelope in a more student-centered direction. A similarly critical *Phi Delta Kappan* article by a much-published critic of results-oriented schooling argued that parents who insist on achievement for their children are selfish and an impediment to the success of other students.[28]

What Teacher-Educators Want

A 1997 Public Agenda survey found a "staggering disconnect" between the priorities of teacher education professors and those of parents and others concerned with schooling.[29] It showed that professors want less structured schooling, i.e., schooling that "facilitates inquiry" and stresses "learning how to learn." It found that professors are chiefly focused on educational process and favor "learner-centered" teaching. By contrast, Public Agenda and other polling organizations have found that parents want orderly schools that emphasize academic fundamentals. Both they and policymakers want improved pupil achievement.

Learner-centered schooling is at odds with the public's education aims.

The gulf between the public and the institutions that train and license teachers is little studied and poorly understood but it explains much about why school reform has failed.[30] It also explains why teacher training standards developed by NCATE are unlikely to treat student achievement as an unrivaled priority. Repeated efforts to reform the public schools have failed to improve achievement because they are interpreted and implemented by educators who have been taught that other aims come first. However, if, as recommended by the NCTAF, all teacher training is brought under the auspices of NCATE, virtually all teachers will be trained by programs that emphasize the professoriate's aims, not the public's.[31]

The gap between teacher-educators and the public is neither transient nor recent.[32] It is a subtle but profound disagreement about the nature and purpose of public education. Although obscured by jargon and mutating methods, the core difference is that the public takes a *learning-centered* or results-oriented view of education while teacher-educators take a learner-centered or process-oriented view.[33]

Over the years, learner-centered pedagogy has been reformulated and repackaged many times. Current names include "student-centered," "developmentally appropriate," and "constructivist." In the early part of the twentieth century, similar practices were called "progressive" and "child-centered." Despite continual relabeling and reinvention, the priorities of learner-centered pedagogy have remained constant. The use of pedagogically correct teaching takes precedence over results.[34]

Learner-centered instruction is a form of teaching in which classroom activity is built around the learner's aims and inclinations. It idealizes learning as student-directed, discovery-oriented activity in which the teacher acts less as manager or director and more as a facilitator or guide. Learner-centered activities are thought to be especially beneficial because they presume to engage students in higher order intellectual activities—which are considered the epitome of the educational process. Students who are eager, mature, and well behaved are likely to benefit from learner-centered instruction. Students who are less well suited to unstructured and selfdirected activity often founder and learn little in learner-centered classrooms.

Schools attempt to accommodate differences among learners by a variety of means. They include, for example, adaptations of instruction to learning styles and curriculum to student readiness. They include boundless exertions to make learning activities attractive, engaging, and intrinsically motivating. Students who respond poorly to learner-centered instruction are thought to lack the necessary motivation and maturity by virtue of deficiencies in their social, economic, and cultural backgrounds.[35] Although societal change is considered the ultimate corrective, the learner-centered prescription for dealing with such students is to accommodate the school's expectations to the student's current behavior and deportment. In theory, the "right" accommodations make possible—but do not assure—the spontaneous emergence of the good qualities with which learner-centered instruction presumes all students are naturally endowed. For example, if a student seems apathetic about engaging in classroom activity, the teacher might diagnose the deficiency as one stemming from poor self-esteem and a dysfunctional family. The teacher might address the problem by placing the student in a cooperative learning group for the purpose of affording encouragement, participation, and the experience of success. The hoped-for educational outcome would be that the student would come to see himself as capable and would subsequently be more inclined to engage in classroom activities.

A different type of accommodation might be made in the case of students who are believed to be poorly motivated and badly behaved because they have experienced social injustice. The learner-centered prescription might be that teachers should demonstrate greater tolerance of the students' apathetic and, perhaps, angry behavior as a means of showing them that the school is a fair and understanding environment. For example, the school might provide counseling or it might infuse the school curriculum with materials that would emphasize the role and the historic contributions of persons who have the same background. Teachers might undergo sensitivity training. The purpose of these measures would be to assure the students in question that their negative behavior and attitudes were not necessary because the school was sensitive to the circumstances of their lives and sympathetic to their feelings.

NCATE's approved programs lean heavily toward indoctrinating teachers in an educational perspective rather than training in effective pedagogy.

These examples illustrate the key reason why learner-centered schooling is at odds with the public's education aims. Whatever the specifics of the accommodations made by the school, their purpose is not the straightforward improvement of achievement but the improvement of conditions congenial to learner-centered instruction. Rather than prescribing a more structured and teacher-directed mode of instruction—one that might be far better suited to students who are not well motivated or well behaved—learner-centered orthodoxy encourages ad hoc intervention for the purpose of facilitating the use of what the teacher-training community believes is an ideal form of teaching. In other words, the learner-centered perspective encourages teachers and schools to concern themselves not with intervening to produce results but with making public-school realities more hospitable to the learner-centered ideal.

Teachers may recognize that such accommodations are ineffective but they defend their use because doing otherwise would seem an abandonment of educational ideals, i.e., the ideal of the self-directed learner engaged in higher order thinking. They have been taught that even ineffectual learner-centered teaching is better than non-learner-centered alternatives. For example, if the student who participates in the cooperative learning project fails to reach expected objectives, the teacher may argue that at least the individual's self-esteem was enhanced. If angry and unmotivated students fail to read and write, the teacher may argue that the school's multicultural curriculum and sensitivity training at least succeeded in preventing these individuals from dropping out.

NCATE and Learner-centered Teaching

NCATE's standards do not explicitly call for learner-centered teaching but they plainly adhere to a learner-centered vision of education. In this view, schooling cannot be expected to succeed without greater equity, diversity, and social justice in American society and thus teacher training must be infused with rightminded social and political values. In other words, NCATE and the teacher education programs that follow NCATE's standards infuse teacher training with social and political idealism because their learner-centered pedagogical doctrine requires it.

NCATE and the teacher-education community are the primary keepers of the learner-centered faith. NCATE's leaders are published proponents of learner-centered teaching.[36] NCATE's approved programs lean heavily toward indoctrinating teachers in an educational perspective rather than training in effective pedagogy. In short, the teacher-training programs accredited by NCATE teach educators that their time and energy should be dedicated primarily to learner-centered teaching and secondarily to results.

Learner-centered thinking has a virtual stranglehold on the teacher-education community.[37] Skeptical academics are suspected of being "in denial" about their own or society's responsibility for reforming adverse social, political, and economic conditions. Proponents of more conventional explanations for academic failure—lack of study, for example—are thought to mistake symptoms for causes and are suspected of blaming the victim. Educational innovations are welcomed but only so long as they fit the learner-centered mold.[38] As E. D Hirsch puts it, alternatives are not "*thinkable*" (italics in the original):

> To question progressive doctrine would be to put in doubt the identity of the education profession itself. Its foundational premise is that progressive principles are right. Being right, they cannot possibly be the cause of educational ineffectiveness.[39]

Tradition, doctrinal zeal, and an absence of competition explains much about the predominance of learner-centered thinking in schools of education. Another factor, however, may contribute greatly to its popularity among teachers and administrators. A theory that educational effectiveness is limited by factors such as social justice, high self-esteem, and a variety of developmental considerations explains one thing very well: It explains how so many teachers and so many schools could be working so hard and yet producing so little. In other words, it offers a convenient, comfortable, and nearly irrefutable excuse for educational failure.

As most teachers, administrators, and professors see it, the presence of educational failure implies less-than-optimal conditions for students. Moreover, less-than-optimal conditions argue against educational accountability and in favor of ever greater commitments of resources for education. If doubled education expenditures do not succeed, perhaps they need to be doubled again. Who can say what constitutes optimal conditions for learning? If schools aren't succeeding, society must make a greater effort.

According to learner-centered thinking, educational success is restricted not only by social, political, and economic conditions. The developmental version of the learner-centered view adds biological restrictions. The "developmentally appropriate practice" concept featured in NCATE's proposed NCATE 2000 standards holds that the student's maturationally determined stage of intellectual development restricts that which he or she can learn.[40] In theory, correctly fitted teaching will result in as much learning as current development permits and academic challenges in excess of that level are apt to cause burnout and damaged self-esteem.[41] In other words, if a student fails to learn that which might reasonably be expected and there are no obvious sociocultural impediments, a state of insufficient development is presumed to exist. It is an attractive theory not because it enables teachers to produce results but because it relieves both teachers and students of responsibility for meeting curricular expectations.

Expecting NCATE to reform teacher training in a way that fulfills the public's hopes is naive.

Pedagogical concepts such as developmentally appropriate practice are also attractive to students and parents because they relieve anxiety about failure to achieve. According to developmental theory, students should be expected to make an effort only with regard to those activities they find appealing and engaging. Whether those preferred activities result in meaningful academic achievement is considered a secondary issue.

The "developmentally appropriate" viewpoint promises academic success through natural and spontaneous means and it supposes that students will learn all that they need to learn when the time is right.[42] If curricular expectations say otherwise, it is the expectations that are wrong. In effect, the developmental viewpoint takes the work out of schoolwork.

Developmentally appropriate practice, education for social justice, and the many other variants of learner-centered education undermine educational effectiveness because they encourage teachers to dedicate their time and energies to overcoming social, economic, and developmental impediments and otherwise engaging students in learner-centered instruction. Of necessity, the activities they arrange must be fun and exciting, whether or not they are activities known to enhance academic achievement.[43] In effect, student satisfaction with the immediate education experience is given far greater weight than the longer-term satisfactions associated with academic achievement. In theory, learner-centered teachers attempt to produce achievement by accommodating student needs. In practice, they assume that education experiences not well received by students are not well fitted to their needs and thus not conducive to achievement.

In many respects, the flaws in learner-centered thinking parallel those inherent in the "root cause" view of crime—the view that poverty causes misbehavior and thus must be the primary target of social intervention. Both perspectives are loosely grounded in social science, both divert the energies of professional helpers into matters that have little demonstrated relationship to results, and both provide built-in excuses for failure. Not incidentally, both require extensive academic training and thereby assure full employment for training institutions and licensure bureaucracies.

The NCTAF's Campaign for Teacher Training Reform

The National Commission on Teaching and America's Future is leading a massive effort to encourage the adoption of NCATE's standards. Originally headed by North Carolina's Governor Jim Hunt and funded by two major foundations, the NCTAF (1996) urges all states to align their teacher licensure regulations with NCATE's training standards and with the standards set by the National Board for Professional Teaching Standards (1990)—advanced teacher certification standards that are themselves aligned with NCATE. In effect, the NCTAF is pressing states to enact policy that collides head-on with the public's desire for stronger pupil achievement.

Expecting NCATE to reform teacher training in a way that fulfills the public's hopes is naive. NCATE is an organization primarily comprised of teacher-education's stakeholders, i.e., the very groups that created the standards now said to be in need of reform. Given its history, it may be safely predicted that any NCATE-led reform will be congenial to learner-centered teaching and antagonistic to achievement-oriented alternatives. NCATE's stakeholders—especially the schools of education—will not have it any other way. If policymakers want teacher training that treats pupil achievement as its top priority, they will have to set standards that are independent of NCATE.

Public Regulation of Teacher Training and Licensure

The teaching profession is regulated by state education agencies and these agencies ostensibly exist to promote the public's aims. In fact, they are staffed, led, and decisively influenced by the profession that they purport to regulate—a phenomenon that economists call "regulatory capture."[44]

Instead of ensuring that teaching serves the public's aims, state education agencies collaborate with organizations like NCATE and thereby serve as a conduit through which the teacher-education community's beliefs are injected into the decisions of legislators and boards of education. For example, a group representing the executive leadership of the state departments of education—the Council of Chief State School Officers—is working diligently with NCATE to assure that state licensure requirements are aligned with NCATE standards.[45] They are also linked by shared leadership. For example, the immediate past chairman of NCATE's Executive Board heads the Kentucky Department of Education and NCATE's current senior vice president is the president-elect of the National Association for Multicultural Education—an advocacy organization bent on infusing multicultural values into teacher training. The effect of these intermingled loyalties is governmental regulation that is supposed to be dedicated to what the public wants but, in fact, enforces what the education community thinks is important.

NCATE and its stakeholders argue that educator control of the regulatory process is proper in that it parallels the professional control of training and licensure in the medical and legal professions. The comparison, however, overlooks a crucial distinction. Consumers can choose among their doctors and lawyers but usually not among their children's teachers. If parents want to make use of the schools they pay for with their taxes, they have few options. Public schools are required to have licensed teachers and nearly all licensed teachers have been trained in the learner-centered mold.

Policy Alternatives

If NCTAF and NCATE succeed, expanded school choice and alternative teacher certification may be the only way parents and policymakers will get teachers who are trained to put achievement first. However, if policymakers are willing to act independently, they can make a vital difference in the kind of skills required of licensed teachers and ultimately in the aims of teacher-training programs.

State requirements for entering the teaching profession vary from state to state but most include a degree from an "approved" teacher training program and successful performance on an exam of pedagogical knowledge. Requirements for subject matter examinations and demonstrations of teaching proficiency have been added or are under consideration in a number of states. The model licensure standards now being collaboratively developed by the Council of Chief State School Officers and NCATE will require teachers to demonstrate knowledge, attitudinal "dispositions," and approved teaching skills—all consistent with a learner-centered vision of teaching. Licensure based on such standards will most likely insure doctrinal conformity, not effectiveness in producing student achievement.

Until recently, there has been no good alternative to exams of pedagogical knowledge and classroom observations as evidence of a teachers' ability to produce learning. The product of teaching, learning, could not be used as an indicator because student learning is influenced by pre-existing differences in student knowledge, skills, backgrounds, motivation, and other characteristics. Within the past few years, however, a statistical methodology that corrects for such differences has been used for teacher accountability in Tennessee and Dallas, Texas.[46] Called value-added assessment, it measures the gains in learning experienced by the students whom a teacher has taught, and is vastly superior to the indirect measures of teacher effectiveness that are now used.

Given that the teaching skills possessed by novice teachers primarily reflect the training they have undergone, the value-added achievement gains of such teachers could be used as reasonably accurate indicators of a training program's quality. In any case, those gains would be a far better indicator of teacher-training program effectiveness than indicators such as test scores and course credits. Moreover, if teachers with a probationary license were required to demonstrate an acceptable level of proficiency in producing value-added achievement gains, teacher training programs would have to become more concerned with whether their graduates were able to produce achievement, not with whether they adhere to learner-centered orthodoxy. In addition, value-added assessment could be used to evaluate teachers for tenure and merit pay decisions.

Over the years, the public has assumed that teachers are trained to produce academic achievement. In fact, most teachers have been trained to use learner-centered instruction. It is a subtle but critical discrepancy. A change to an achievement-oriented indicator of teacher preparedness would stir significant change in most teacher-training programs. They would either have to begin emphasizing skills that enable teachers to be effective or fail to produce licensable graduates. Programs that have traditionally taught result-oriented methods, however, would only have to fine tune their efforts.

Used in conjunction with a well-validated achievement test, value-added assessment can provide officials with an indicator of teacher preparedness that is aligned with the public's priorities and independent of those of the teacher education community. If policymakers want teacher training dedicated to results rather than idealism, a change to value-added teacher assessment might be the single most effective action they could take.

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Debating Alternative Teacher Certification: A Trial by Achievement

Michael Kwiatkowski

The number of teachers who enter the classroom through "alternative" routes is small today, but expected to grow. States and districts increasingly turn to alternative certification to widen the pool of teaching candidates with background in high-demand specialties, candidates from under-represented groups, or those prepared to teach in challenging settings. Studies show that alternative certification does increase the representation of teachers with these qualities. While existing studies of the effects of these teachers on student achievement have limitations, most researchers have concluded that alternative route teachers are at least as effective as their conventionally-trained counterparts, if not more so. This report concludes that, while alternative certification is a promising reform, it will not have a real effect until other issues like teacher salaries and working conditions are also addressed.

The Many Faces of Alternative Certification

A rapidly expanding force has emerged in teacher education: the opportunity for school districts, universities, and other educational agencies to offer certification for teachers who complete an in-district teacher preparation program. This contrasts with the traditional approach of awarding teacher certification as part of an education baccalaureate program mainly accomplished through a college or university. It's not an easy alternative to complete, usually; it's not inexpensive, unless there are few other options; it's not common, yet; and it is already one of the most hotly debated issues since chalk first met blackboard.

From 1983 to 1996, over 50,000 teachers received training and certification through Alternative Certification (AC) programs nationwide. This figure does not include thousands more who are now enrolled in newly emerging alternative programs.[1] While the number of teachers certified through AC is a relatively small percentage of the total number of teachers certified, the trend is expected to accelerate.

Driving this trend is a quest to enhance education through at least four important goals:

1) increase the teaching pool of those competent in high-demand educational specialties,
2) increase the participation of under-represented teachers,
3) increase staffing levels of urban schools or "difficult settings," and
4) decrease the need for emergency credentialling to meet teacher shortages, although emergency certification is also a form of AC.

Thus, the supposed strength of AC lies in its potential to attract and hold a segment of the population not currently engaged in education. Of course there are numerous related sub-issues to these goals—economics, policy, power, tradition, professionalism, public perception, and the current distressed state of American education, to name only a few. Too often drowned out is the more central issue of student achievement.

Like many contemporary innovations in education, AC actually has roots extending back several decades in teacher preparation. Martin Haberman noted that it was a common practice in the nineteenth century for each school district to hire and certify its own teachers.[2] Large districts eventually developed their own "Normal Schools" of teaching practice with a system of testing for licensure. Normal Schools often grew into teacher colleges, then became state colleges, and finally developed into universities. As these colleges grew, teacher training left the aegis of the district and was assumed under a baccalaureate program. If there is irony in AC, then it is a return to the traditional source of teacher training. School districts have been and will continue to be ultimately responsible for the quality, and thus, the preparation of its teachers.

Part of the AC controversy stems from a lack of clarity of which kind of AC is under discussion; it's a shibboleth covering state and district training programs rigorous and weak. The National Center for Education, through *Alternative Teacher Certification: A State-by-State Analysis 1996*, delineated that eight types of AC may be found nationwide:

Class A is the category reserved for those programs that meet the following criteria:

- The program has been designed for the explicit purpose of attracting talented individuals who already have at least a bachelor's degree in a field other than education into elementary and secondary school teaching.
- The program is not restricted to shortages, secondary grade levels, or subject areas.

- The alternative teacher certification programs in these states involve teaching with a trained mentor, and formal instruction that deals with the theory and practice of teaching during the school year—and sometimes in the summer before and/or after.

Class B: Teacher certification routes that have been designed specifically to bring talented individuals who already have at least a bachelor's degree into teaching. These programs involve specially designed mentoring and formal instruction. However, these states either restrict the program to shortages and/or secondary grade levels and/or subject areas.

Class C: These routes entail review of academic and professional background, transcript analysis. They involve specially (individually) designed inservice and course-taking necessary to reach competencies required for certification, if applicable. *The state and/or local school district have major responsibility for program design.*

Class D: These routes entail review of academic and professional background, transcript analysis. They involve specially (individually) designed inservice and course-taking necessary to reach competencies required for certification, if applicable. *An institution of higher education has major responsibility for program design.*

Class E: These post-baccalaureate programs are based at an institution of higher education.

Class F: These programs are basically emergency routes. The prospective teacher is issued some type of emergency certificate or waiver which allows the individual to teach, usually without any on-site support or supervision, while taking the traditional teacher education courses requisite for full certification.

Class G: Programs in this class are for persons who have very few requirements left to fulfill before becoming certified through the traditionally approved college teacher education program route, e.g., persons certified in one state moving to another; persons certified in one endorsement area seeking to become certified in another.

Class H: This class includes those routes that enable a person who has some "special" qualifications, such as a well-known author or Nobel Prize winner, to teach certain subjects.

Class I: These states reported in 1995 that they were not implementing alternatives to the approved college teacher education program route for licensing teachers.[3]

Complicating this arrangement even more is that some states and districts may have any combination of programs while others may choose to implement just one. All fifty states allow for some form of AC, although several have declined implementation at this point. Appendix A details the various state programs offering alternative certification.

States electing to implement alternative certification have, on average, two of the eight programs. Georgia has the most with six AC programs; followed by New Hampshire with five; California and New York with four; seven states have chosen three programs; fifteen states went with two programs; and twenty-two states decided on just one program. The most popular license is Class F (emergency routes) with fifteen states including it in their options. Class A and Class D have each been selected by thirteen states. Class C is included in twelve states; Class B and Class G are each included in eleven states; and Class E and Class H are each included in eight states. Of the ninety-plus plus AC programs found nationwide, each one may be given numerous working titles at the state, county, and district levels. The research dilemmas become apparent when one is faced with a single label that covers a multitude of varieties.

Those who leave their present position and seek teaching through alternative certification do so not as a repulsion from a negative situation, but as a positive attraction to something they consider to be a more worthy occupation.

If You Build It, Will They Come?

Yes, and many of them bring the gifts of maturity and experience.

Before looking at who is attracted to alternative certification, one needs to become familiar with the extensive research into career changers just prior to opting for the educational switch; they form the pool of applicants. Traci Bliss' 1990 study of Connecticut's AC program delineated four categories of would-be teachers.

Career Explorers – approximately 25 percent of the total group, these range in age from their mid-20s to early 30s and have spent some years in one or more professions such as law, journalism, marketing, research, computer programming, insurance adjustment, acting, and social services.

Career Changers – constituting 20 percent of the group, these are generally in their mid-30s to late 40s, have had a long-standing and successful career, and now wish to make a change. This group includes anthropologists, a graphic designer, symphony conductor, university vice-president, and news magazine editor.

Second-Career Individuals – composing 15 percent of the class, these have retired from their original careers and include several research scientists and corporate executives, a judge, nuclear submarine commander, and foreign service diplomat.

Educators – approximately 40 percent of the class and the largest category within the program, this group consists of committed teachers who are not yet certified to teach in Connecticut public schools—long-term substitutes, independent school teachers, and a handful of college professors and instructors.[4]

Of course, Connecticut is considered unique in its program goals. Not faced with immediate teacher shortages, it chose to use AC as a means to further refine and heighten its teacher preparation standards. Not all AC recruitment may be as prosperous in the choice of applicants.

Similarly, the work of Crow, Levine, and Nager, using New York teacher applicants, differentiated among *Homecomers*—where entering teaching resembled a psychological homecoming; teaching was a dream come true. "They believe their earlier plans to teach were thwarted by negative parental and societal attitudes, market forces, and/or financial obligations."[5] *The Converted*—those who did not consider teaching until some crucial event caused them to reconsider professional plans. Finally, there were *The Unconverted*—while having no previous direct interest in teaching, they were loosely coupled to the schools because of their interest in educational reform.

Additionally, Stevens and Dial reported on a study by Kanchier and Unruh in which "Changers indicated that the greatest constraint in their former positions was lack of challenge, achievement, and use of skills and ideas. The prime reasons changers left the corporation were greater autonomy, disillusionment with the corporation's personnel policies, greater achievement, better fit of values and work, more challenge, and more meaningful work."[6]

However, it would be an unwarranted assumption to simply believe career changers generally pack "dissatisfaction" into their baggage wherever they go. Kerr noted the research of Fountain which concluded that those who came to teaching as a career change expressed greater satisfaction than those who had worked only as teachers.[7] Lutz and Hutton found that when comparing career changers entering AC to traditionally trained new teachers, the career changers chose the following at a statistically significant higher level:[8]

- Teaching provides a sense of personal achievement and satisfaction.
- I was encouraged by persons I respect to enter this field.
- Teaching provides an opportunity to help the less fortunate.
- Teaching makes better use of my abilities than other careers.
- I felt successful in my first career.

Based on the above information, one could conclude that those who leave their present position and seek teaching through alternative certification do so not as a repulsion from a negative situation, but as a positive attraction to something they consider to be a more worthy occupation. It is not so much leaving the bad as it is going to a "bigger good." As Boser and Wiley found in their evaluation of a Tennessee AC program, "The program did achieve its original objectives by providing an accelerated program that attracted individuals from the target group of academically talented persons."[9] But just who is this "target group"?

To begin with, if the target is talent, then the target range is huge. "There were 15,358 school districts delivering education to 41,223,804 students in 80,395 regular elementary and secondary schools in the United States in school year 1990-91.[10] However, within this enormous national stage, "By its very nature, an alternative program will attract a different population of participants than traditional programs."[11] In effect, one is looking for candidates from a broader pool, compared to the conventional market of educators in general.

Academic and popular literature abounds with the glaring difference in the numbers of minority teachers compared with the number of minority students. It is often argued that minority students need a diverse teacher staff, especially teachers of racial and ethnic minorities as role models, to enhance their academic performance. Martin Haberman succinctly states the case, "The disparity between increasing enrollment of Hispanic and Black children and the dwindling number of minority teachers, even where traditional certification regulations are circumvented, portends a worsening of the problem throughout the urban school districts."[12] "Nationally, state education data show that 9% of teachers and 26% of students are minorities."[13] And the gap between percentages is expected to widen. Smith indicated that projections of the teaching force into the Year 2000 yielded 5 percent minority teachers compared to a possible 33 percent minority student population.[14] Stoddart noted that for the last twenty years traditional approaches to teacher recruitment have been unable to abate this disparity.[15] But alternative certification may show promise in this regard.

> *Several studies have been extremely important in showing the success of alternative certification in attracting new and under-represented talent.*

Since AC is a relatively new reincarnation, broad and comprehensive research is often sparse. However, several studies have been extremely important in showing the success of alternative certification in attracting new and under-represented talent. Houston, Marshall, and McDavid, in evaluating the AC program *vis-à-vis* the traditional certification (TC) program at the Houston Independent School District, found significant percentage differences among participants in the two programs—more older, males, and minorities, as shown below:[16]

Factor	**AC Program**	**TC Program**
Males	24%	6%
30–40 year age	42%	14%
African American	29%	13%
Hispanic	22%	19%
Anglo	48%	67%

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Minority participation in AC resulted in statistically significant changes in the new teacher cohort ($p=.002$). Expanding to the state level, Texas now certifies over 16 percent of its new teachers through the AC program.[17] Alternative certification is now the primary means of attracting minority professionals into teaching.[18] While 91 percent of the Texas public school teachers are Anglo, 43 percent of the teachers entering through the state's alternative programs are minority.[19] Additionally, "In Texas, alternative certification interns have higher pass rates on certification tests than do traditional education graduates. Minorities have markedly higher pass rates than minorities who are initially certified through regular channels."[20]

Similar to the Houston group, Trish Stoddart comprehensively reviewed alternative certification for the Los Angeles Unified School District (LAUSD). From 1985 to 1995, California's student population increased by 900,000 resulting in a need of approximately 90,000 to 190,000 new teachers. Schools in metropolitan Los Angeles add about 14,000 students per year. In 1985, approximately 45 percent of all new teachers hired by LAUSD were on emergency credentials. In other words, this Mother Hubbard-esque dilemma brought severe pressure on changing the way business was traditionally conducted. Since the implementation of its AC program in 1984, LAUSD trains approximately 96 percent of all the alternatively certified teachers in California; approximately 300 candidates a year, or about the entering class cohort size of a California State University teacher education program.[21]

Stoddart has found a fairly uniform picture of AC success in LAUSD. Citing state studies, she found that "In 1984, 775 students graduated nationally with a degree in mathematics education, 103 from California institutions. In the same year, LAUSD began training 30 new math teachers, about 4% of the national figure and 16% of the California figure. Also in 1984, 702 science education majors graduated nationally, 191 from California institutions. In 1984-1985, LAUSD began training 64 new science teachers or approximately 9% of national production and 34% of California production."[22] Continuing, Stoddart concluded that, "These figures suggest that district-run alternative certification programs can recruit candidates in high demand subject areas to teach in hard-to-staff urban schools, and they reduce the need to hire teachers on emergency credentials."[23]

Besides the ability of LAUSD's AC program to attract difficult-to-fill subject-matter positions, it does an equally admirable job of attracting minority teachers. In a 1987 cohort hiring assessment Stoddart found:[24]

- Minority English teachers: 33.3% through AC; 0% (zero) TC.
- Minority mathematics teachers: 36.1% through AC; 9.0% TC.

In an earlier study, Stoddart noted that:

> The LAUSD intern program (AC) was recruiting minority teachers at a much higher rate than the percentage recruited through traditional university routes.

> Over the 6 years since the program's inception, almost one-third (307 out of 1100), of the teachers recruited through the intern program have been from minority groups—12% were Hispanic, 9% Black, 6% Asian. It could be argued that this comparatively high recruitment rate for minorities is a function of California's ethnic diversity. The LAUSD Intern Program, however, recruits minorities at a much higher rate than the California State University System (CSU). The most recent figures from CSU show that in 1986-1987 about 13% of teachers recommended for credentialling from the institution were from minority groups (compared to LAUSD's 33%).[25]

Caution must be exercised before leaping to a conclusion, especially when based on just two cases of extraordinary success, but optimism is justified. New Jersey's success in expanding its hiring pool through alternative certification, especially its ability to increase minority teacher representation from 9 percent to 20 percent is documented in studies by Feistritzer and Chester and Natriello and Zumwalt.[26] Continued investigations have yielded similar results in other areas:

- Transitioning military personnel into teaching[27]
- Hiring for specific content and curriculum[28]
- Attracting teachers in bilingual education[29]
- Hiring more vocational education, mathematics, and science teachers[30]
- Increasing special education teachers[31]

In a comprehensive study of recruiting teachers through AC, the RAND Corporation concluded that:

> These nontraditional programs also appear to be attracting substantially more minority candidates than are other teacher preparation programs. Overall, 20% of the nontraditional recruits are minority group members (compared to) only 9% of all candidates newly qualified to teach.
>
> Whether due to location, financial aid, or active recruitment, these programs appear to be successful at recruiting minority candidates.[32]

However, concerning hard-to-fill subject-matter specialties, the same report cautioned that "Those recruits who do come from a scientific working background are more likely to come from the lower paying technical, support, and service fields than they are from the professional and managerial fields. Those coming from nonscience fields are also drawn disproportionately from jobs in the lower salary ranges."[33] "Nontraditional teacher preparation pro-

AC programs, in comparison to TC programs, have attracted proportionately more males, persons over 25, minorities, and persons who have majored in college math, science, and foreign languages.

grams cannot fully overcome other attributes of teaching that make recruitment and retention of teachers difficult."[34]

Hawley's work echoed the above sentiments about minority and subject matter specialty teachers. He too concluded that "Attracting candidates to areas of teacher shortages through AC does not alter most of the conditions which contribute to the shortages—such as low salaries, poor working conditions, and status of teaching as a profession. Thus, it can be expected that the demand for teachers in certain urban and rural areas, mathematics, some sciences, special education, and bilingual education will continue to exceed the supply."[35]

While alternative certification might not be able to ameliorate the many forces that drive teachers out of the profession, AC teachers tend to persist in greater numbers.

One possible factor working against AC recruiting efforts is the cost. Hawley found that it costs about 75 percent more to prepare a teacher in a well-designed AC program compared to a TC program. Intensive training like alternative certification does not come cheaply.[36] McKibbin cited data indicating that the LAUSD AC program costs approximately $1,300 per year for each intern (in 1988 dollars).[37] Guyton, Fox, and Sisk found that an AC program in Georgia spent over $11,000 per candidate, but this included food and housing subsidies.[38] Texas' AC program has training costs, which average about $3,400 per intern per year, deducted from the interns' salaries.[39]

In education, as in most other occupations, it is not surprising that even an expeditious approach like AC cannot do everything and do it cheaply. It is a complex and multi-faceted world calling for diverse and creative approaches to solve real-world problems; in other words–trade offs. Be that as it may, Hawley still concluded that "AC programs, in comparison to TC programs, have attracted proportionately more males, persons over 25, minorities, and persons who have majored in college math, science, and foreign languages."[40]

After They Enter, Will They Stay?

Yes, and their persistence could well make the program cost-effective.

Few studies have evoked more controversy than Schlechty and Vance's study of teacher preparation and retention.[41] Their critics have come and gone, while their work remains seminal to the field of education. The conclusion that an estimated 40 to 50 percent of first-year teachers will not be teaching in seven years indicates that voting with feet is still popular—teaching is too often too damn tough, regardless of the public fantasies about vacations, hours, and blithe spirits.

Persistence rates are obviously important to any training program, but maybe not real important. If they were real important, then traditional certification would have folded long ago. After all, following years of costly college training and district orientation expenses, what other profession aside from education would risk abandoning so many of its future generations?

While alternative certification might not be able to ameliorate the many forces that drive teachers out of the profession, AC teachers tend to persist in greater numbers. Adams and Dial, using a population of 2,452 Anglo, African American, and Hispanic first-year teachers, examined the characteristics of those leaving a large urban district:

> The risk of leaving the district for women was approximately 37% greater than the risk of leaving for men. Teachers who began their teaching careers before they were 40 years of age were 43% more likely to leave the district than teachers who began their teaching careers at 40 or older. Whites were nearly four times as likely to leave the district as Blacks. Whites were 57% more likely to leave the district than Hispanics. Teachers with only a bachelor's degree were 68% more likely to leave the district than teachers with a graduate degree. Traditionally certified teachers were approximately 19% more likely to leave the district than alternatively certified teachers.[42]

McKibbin found that in the LAUSD, the annual drop out rate from teaching for AC teacher interns was 20 percent compared to 40 percent for TC first-year teachers during the same period.[43] Not only did more stay in teaching, but 91 percent of the AC interns elected to return to that particular district the next year. Stoddart found only a 9 percent attrition rate for AC teachers during the first two years. "The program also has a good retention rate for minority teachers. Of the 307 minority interns recruited by the district, 266 are still teaching in LAUSD—an overall retention rate of 87% compared to 74% for white interns."[44] Again, AC's retention advantage seems to be built into its targeted demographics.

A RAND Corporation study also found encouraging numbers for AC persistence. Seventy-five percent of the alternative certified teachers were still teaching two years after program completion, compared to just 60 percent of the conventionally certified.[45] However, in a Dallas study, only 40 percent of the AC interns said they planned to stay in teaching, compared to 72 percent of traditionally trained recruits.[46] But it makes a difference which AC candidates one asks. Of the group of AC participants, the *new candidates* were least likely to say they planned to stay in teaching while the *mid-career recruits* working on a master's degree were most likely planning to stay in teaching.[47]

Persons going through alternative certification programs are much more interested in working in inner cities.

In concluding this section, a brief return to Schlechty and Vance is in order. While their teacher selection and retention study is perhaps best known for bringing a number of educational ills to the light of day, less well known is their entreaty that "Responsibility for the professional training of teachers should be divorced from institutions of higher education, and teacher education should once again be placed where it in fact occurs—in the public schools."[48] Perhaps this message of fifteen years ago contributed to the current trend of collaborative field-based teacher preparation in a growing number of states.

Alternative Certification and the Urban Setting

Thus far, alternative certification looks extremely promising in attracting a talented new pool of future educators who are more diverse and persistent in their teaching career. However, one of the requirements in contemporary education is to translate this nontraditional certification approach into increasing the number of teachers for urban or special settings. The front page of virtually every newspaper across the country has documented the many challenges facing our urban educational settings. Does AC better prepare new teachers to assume the responsibilities of this demanding milieu? The work of Emily Feistritzer found several insights.

> Large urban areas of the country have also experienced greater difficulty in attracting traditional teacher education graduates. Data collected by the American Association for Colleges of Teacher Education show that only 4% of undergraduate students studying to be teachers want to teach in inner cities.
>
> However, data show persons going through alternative certification programs are much more interested in working in inner cities. A survey conducted by NCEI in 1990 showed that a third of alternate-route teachers, compared with 12% of persons who had entered teaching through traditional routes, said they were willing to teach in a large inner city if the demand for teachers was great. An additional 21% of alternative-route teachers said "maybe" they would teach in a large inner city. More than one fourth of all public school teachers, 77% of returning teachers, and 67% of new hires said "no." More than half of alternate-route teachers said they would be willing to teach in a medium inner city. This compared with one third of traditional-route teachers. Half of alternate-route teachers in both Texas and New Jersey are teaching in inner cities.[49]

One possible explanation for this difference in attitude is that AC teachers are more likely to have experienced their own urban education growing up. Natriello and Zumwalt found that AC elementary teachers were more likely to have lived in an urban community (22.7 percent) than TC teachers (13.6 percent).[50] AC English teachers were more likely to have come from urban schools (16.6 percent) compared to traditionally trained English teachers (11.1 percent). Additionally, AC mathematics teachers were also more likely to have lived in an urban area (16.7 percent) compared to college-trained mathematics teachers (6.7 percent). Haberman succinctly noted that "most teacher education graduates refuse to work in urban schools."[51] Then again, most are unfamiliar with these difficult settings.

The power of "lived experience" is a strong attractant to staff urban settings. Simply attending a large city's university-based teacher training program is not potent enough

AC teachers held higher expectations for low-income and minority students.

to encourage candidates to remain in city schools. "Most future teachers who complete teacher education programs in metropolitan universities behave like their counterparts in nonmetropolitan universities. They seek and obtain positions in small towns and suburbs while trying to remain as close to home as possible."[52]

Stoddart's work with LAUSD may well set the conclusions in stone: 70 percent of the AC interns grew up and attended school in a city compared to only 22 percent of teacher education students.[53] Additionally, 70 percent of the AC interns, compared to only 18 percent of TC interns, said that they would prefer to teach in an urban school. Preference is one thing; effectively working with students is quite another. How do the two groups view their big-city students? Does prior location of early education experiences shape present teaching attitude?

> Ninety-five percent of elementary (AC) interns, 95% of secondary English (AC) interns, and 81% of secondary mathematics (AC) interns believe that low income and minority students are capable of learning higher order concepts in the subject areas they teach. In contrast, only 76% of elementary (TC) teacher education candidates, 70% of English (TC) teacher education candidates, and 60% of mathematics (TC) teacher education candidates held the same expectations. At least one third of the traditional teacher education candidates believed these students should be only taught basic skills in reading, writing and grammar, and arithmetic.[54]

Stoddart proceeded to cite research indicating that AC teachers not only held higher expectations for low-income and minority students but also attempted to develop curriculum and instructional techniques responsive to the needs of diverse learners. Their approaches to teaching were often based as learners, on prior life-skills, and previous work experience.

> The alternative route candidates are also more likely to hold high expectations for low-income and minority students than the teacher education graduates and to take more responsibility for students' academic success or failure.
>
> The university-certified novice teachers found it difficult to relate to students who were different from themselves. They emphasized the difference between themselves and the low-income and minority students they were teaching. Most held a "cultural deficit" perspective on student achievement and believed that their poor and minority student's lack of enriching life experiences made it difficult for them to function as autonomous learners or understand higher-order concepts.[55]

However, given the multitude of problems associated with urban schools, AC must not be seen as a panacea for years of neglect and discrimination. Stoddart's conclusions included serious doubt if a single AC program could do anything to help improve instruction for at-risk students. This doubt is very healthy. Given the state of contemporary urban schools, even the best AC program may only be a young gallant David without a sling.

The Many Challenges of AC Research

When discussing an educational evaluation of alternative certification, since the field is so new, one actually spends most of the conversation discussing the state of AC research. Evaluation implies a solid grounding in definition and dependent variables: one knows what to look for and how to interpret it. The introductory section of this report delineated eight different types of AC. Knowing that states could implement any and all makes tracking AC effectiveness almost impossible, at least for now. With rare exception, the AC studies included in this report, or appearing elsewhere, never defined which kind of AC program was under consideration. Remember, the AC programs before us are just in their infancy, and like with any infant, one spends most of the time feeding and changing them. However, some preliminary observations are being made.

First, the *caveats*. While most states have some form of a working alternative certification program, little research, especially data-based studies, has been published on the topic. "What is missing are reports of studies that provide analyses of actual data which support or refute a contention about possible outcomes of alternative certification. Of the few which have collected and analyzed data, the generalizability of the studies has been limited because the available samples were limited."[56] Boser and Wiley noted that measuring the success of teacher preparation programs is difficult at best; "until valid measures of teaching performance become accepted, it is not possible to make quantitative comparisons between teachers from different preparation programs."[57] Often, studies do not compare teacher training programs within the same district, choosing instead to compare in-district teachers with state or national samples.[58] Additionally, the previously discussed array of AC definitions makes it difficult to compare alternative certification to other forms of licensure.[59] This problem is not unique to a comparison of AC and TC programs, but is representative of the general state of educational research.[60] Trish Stoddart encapsulated the necessary research vigilance: "findings indicate the need for caution in making generalizations about either form of teacher preparation; they demonstrate the importance of comparative research which looks at the influence of type of teacher preparation, level of schooling, teaching assignment, social and geographical context, and individual biography on learning to teach."[61]

Yet there is no shortage of suggestions in how to conduct rigorous evaluations. Alternative certification researchers call for investigations that tie outcomes to specific processes;[62] measuring outcomes against stated goals or comparing success on clearly stated criteria;[63] and instituting longitudinal protocols.[64] Examination of alternative certification is often a study in contrasts; some educators prefer to freely editorialize that the impact of AC is unfavorable,[65] while others are the very model of rigor and intelligence.[66]

Evaluation research into program effectiveness may even seem contradictory when done thoroughly. Evaluation of the alternative certification program in New Jersey is illustrative. Natriello and Zumwalt essentially gave it a favorable evaluation in achieving several recruitment goals;[67] in contrast, Smith was highly critical of its management, organization, and teacher effectiveness.[68] Determining the effectiveness of the New Jersey program was increasingly complicated when researchers reported that "despite extraordinary efforts by the state of New Jersey to recruit AC candidates with strong academic credentials, the candidates actually selected by school systems, on average, were from the middle range of the academic qualification of those in the selection pool rather than from the top one-third or one-fourth of the candidates."[69]

The alternative route teachers were as instructionally effective as their university-educated counterparts.

Despite the incipient and problematic characteristics of AC/TC evaluations, interesting research is surfacing. Stoddart found that there were no significant differences between the AC/TC groups in LAUSD. "The researchers concluded that the alternative route teachers, as a group, were as instructionally effective as their university-educated counterparts."[70] McKibbin came to a similar conclusion.[71] Adelman, Bogart, and Michie found that AC programs were producing teachers more skilled than their TC colleagues.[72] Rodman found that AC participants scored higher on the National Teachers Examination than TC participants.[73]

A Connecticut AC evaluation found that:

> (Eighty-eight percent) of supervisors felt that Alternate Route teachers were stronger than other beginning teachers in personal qualities; they described the Alternate Route teachers as mature, hard-working, committed to teaching, willing to improve, willing to be active in all school activities, conscientious, having self-esteem, caring, creative, flexible and enthusiastic. Supervisors' overall reaction to these new teachers was extremely positive. All but three respondents (94 percent) indicated they would gladly rehire their particular [Alternate Route teacher].[74]

Lutz and Hutton uncovered a similar thread in the Dallas AC program. AC teachers significantly outperformed TC teachers on teacher advisor ratings and on a number of other indicators leading the researchers to conclude that the "program did indeed provide (Dallas) with quality teachers."[75]

A collection of research investigations found that while not necessarily better, alternative certification teachers were at least equally effective compared to traditionally trained teachers.[76] Interestingly, when pooling a large list of variables for use in stepwise regression and discriminate function analyses, Lutz and Hutton found no significant predictors of AC intern success entered into the equations.[77] The way ahead lies essentially uncharted, inviting much continued exploration. "Too little program evaluation is underway."[78]

A subset of program evaluation pertains to student achievement, perhaps the litmus test of any program's true worthiness. While this is an extremely important pursuit, little information is being generated. Darling-Hammond, in trying to compare "alternate route *candidates*" with "*trained teachers*" found student achievement gains were significantly lower for the AC candidates.[79] (Of course!) Cornett found that the students of AC teachers in her study scored as well on achievement tests as those students taught by traditionally trained teachers.[80] Hawley summarizes the student achievement dilemma: "How effective are TC teachers, in comparison to AC teachers, in facilitating student learning? The research on AC programs does not provide good evidence on this question. Studies which rate the performance of AC and TC teachers tend to show little difference in ratings and there is little research on whether the students of AC and TC teachers achieve at different levels."[81] Where can one turn to for direction on these matters? Perhaps Lutz and Hutton provide some harmony in the cacophony of AC research through the "Characteristics of a Good Program" section of their research report.[82] Ultimately, it may not matter *which* alternative program is implemented as much as *how* the program is integrated into the district. Their work invites unanimity in establishing best practice principles through which evaluative research may take place.

Carefully designed alternative certification programs offer a way to deal with teacher shortages that is superior to the granting of emergency certificates.

The Numbers Are Foreboding

Before proceeding further, it is necessary to clear up some loose ends, i.e., issues related to school conditions as a learning workplace and the supply of teachers in the market. Fetler provided a case-in-point—California: 232,000 teachers were employed in 1996.[83] However, by 2005 an estimated 300,000 will be needed, an increase of 29 percent, to offset an expected 18 percent increase in students. Reasons for this projected increased teacher need include not just continued public school enrollment growth but an accelerated effort to reduce class size through state legislation.[84] Some school districts must use emergency credentialing when faced with a teacher shortage. Emergency credentialing means that the teacher is allowed to work even with little or no training and often with scant, if any, supervision. Does alternative certification mean an end to the dreaded emergency credentialling practice found in some school districts? While studies on this issue are emerging, a certain amount of logical speculation may lead to an informed answer at this juncture—probably yes and no. Nationally, approximately 1 percent of working teachers have emergency credentials.[85] But national figures are irrelevant to the argument because emergency credentialing is often a local issue, where pockets of under-staffed schools repeatedly seek immediate relief. It is not that we need just more teachers—we need more teachers HERE! and THERE! Alternative certification does get districts moving in the right direction.

> Carefully designed alternative certification programs offer a way to deal with teacher shortages that are superior to the granting of emergency certificates; alternative certification offers a career path into teaching for the academically qualified person who seeks a teaching position but lacks the means or opportunity for a period of sustained professional training. Alternative certification relieves some of the political pressure built up by the demand for choice and for a deregulated economy.[86]

Unfortunately, as Darling-Hammond noted in a review of pertinent research, the number of needed emergency credentials far surpasses the total output of AC programs both nationally and by state.[87] Even in cities that produce and use AC teachers in record number, the number of hired emergency teachers is still greater; "districts do not have the resources" including the financial resources cited earlier in this report.[88] For instance, in the fall of 1986, 2,200 teachers were hired in LAUSD, 60 percent of whom received emergency certificates, with no professional training.[89] This is where education numbers make for a precarious weird science. In California, if districts needed to reduce the average class size by just one student, an additional 10,000 teachers would be needed (along with $400 million).[90] Therefore, a few thoughts must be devoted to looking at the teacher employment picture.

One does not have to be a Nobel Prize winner to understand that the teacher job market is punctuated by cycles of high and low surplus. The future existence and amplitude of these cycles is hotly debated.[91] One of the clearest explications of the issues is found in Charles Kerchner's "Shortages and Gluts of Public School Teachers: There Must Be a Policy Problem Here Somewhere."[92] Historically, at least prior to alternative certification, districts or states could increase teacher applications not by raising salaries but by lowering standards. "A teacher shortage is measured by lack of credentialed applicants rather than the lack of highly qualified persons"[93]

> The more manipulable incentives to enter teaching have to do with *salary and structuring the quality of teacher work life* (emphasis added). Both involve money, but it is difficult to foresee a market response in which wages will increase salaries rapidly enough to attract those who have other professional labor market options.[94]

The twin issues of salary and working conditions have led to a problematic transformation in education: some observers claim that those who historically went into teaching, those who wanted to live on teaching wages and work in bureaucratic and deteriorating schools, have tended to be some of the least academically talented and the most poorly prepared.[95] Of course, many disagree with this contention,[96] while others have noted that teacher candidate curriculum is a host of irrelevant contractions which get quickly "washed out" by actual teaching experience.[97]

Extending this supply and demand discussion is well beyond the intent of this report, except for how it depletes the strength of alternative certification programs in attracting minority applicants and urban teacher candidates.[98] There is a very strong undertow working against the promises of AC. "Most minorities in the university are pursuing degrees in business, engineering, and social science"[99] leaving behind teaching and instead "choosing other jobs which offer better pay, more opportunities for advancement, and better work conditions."[100]

Teacher salary has often been a point for heated debate; "More money would bring better candidates currently going to more lucrative positions" goes the argument. O.K. Assume that we raise teacher wages by $10,000, making them roughly comparable to police officers. "Allan Odden points out that to raise 'the average salary of all 2.1 million United States teachers by $10,000, to make teaching more financially competitive with other jobs that require equivalent training, would cost more than $20 billion.' This comes to more than $500 per pupil"[101] political suicide for policy makers.

Haberman offers numerous ways to attract more minority teachers, though his points apply to all applicants. His suggestions include increasing salaries, raising the status of classroom teachers, empowering teachers, and working much more closely with talented students in community colleges, among others. But one suggestion echoes the research cited earlier about AC teachers in urban settings: "If we are truly committed to increasing the number of minority teachers, then improving the quality of preschool, elementary, and secondary schools in urban areas is the key, since most future minority teachers attend urban schools."[102] In a more systems-theory orientation to increase minority teachers, the "Stilwell Approach" delineates eight programmatic steps with fifty-two directly identifiable and accountable district and school-site activities.[103]

Gordon noted that "people of color do not choose teaching as a career because incentives such as salary, prestige, and social mobility are low relative to alternative careers now available;" "a problem not solvable in the present social conditions."[104] Gordon's qualitative research with 140 teachers found numerous reasons why minorities do not select a teaching career; most salient here are low status, low pay, negative image, and bad schools. It is not just would-be-teachers rejecting education, but their sources of support, especially family and friends, are discouraging the choice for exactly the same reasons. If most of one's world says no—then even a gold-plated red-carpeted AC program stands little chance of significantly increasing minority enrollment, subject specialists, and urban teachers. As is so often the case in education, the social context supercedes the school context, including employment.

Moving the AC Debate into a Viable Future

The weird science of alternative certification research means working on many fronts simultaneously; incorporating the data on student achievement; untangling fiscal relationships; flipping between micro and macroscopic lenses. But it also means patience as AC programs produce larger numbers for longitudinal studies, and waiting as poorly constructed or unsupported programs fold.

The very idea of circumventing traditional educational training is threatening in some quarters. Alternative certification will definitely have an impact on many areas of education; not the least of which are colleges of education. Does this herald a period of creativity and entrepreneurship at the teacher college level as more districts, college students, and career changers seriously consider training options?

Shifting from debating AC to researching AC could have a healthy effect across all of education.

The age-old debate about whether teaching is a profession, craft, vocation, art, etc. was carefully avoided in this report. It is practically medieval to keep this discourse alive—let it die a natural death and get on with something more useful. Untangling the "can of worms" built into AC nomenclature and chaotic requirements would be an effective first step in establishing an AC line of research. Then beyond conceptual clarification, recent work in the area of educational standards may supply guidance in AC program construction and evaluation. Shifting from debating AC to researching AC could have a healthy effect across all of education. Alternate forms of teacher preparation encourage educators and schools to think outside the envelope when confronted with numerous enrollment crises. The introduction of new approaches to teacher induction and training could become a renaissance for the types of rigorous research needed at all levels of education.

Alternative certification has trouble getting professional respect partly because it has not become part of a national education agenda. Its successes, if they occur, are a matter for local school-district celebration. It looks to almost operate in secret. Alternative certification seems to be an attempt to fashion a modern solution to long neglected but clearly evident problems. It seems rather doubtful if AC could ameliorate the problems that confront so many of our schools; its implementation level remains the classroom. But if we take what has been done with alternative certification over the last decade, could not a parallel program be constructed for alternatively certified school principals? Career changers may be interested at working at other levels of school governance besides the classroom. As Schlechty and Vance noted, "It is time to accept that the quality of teaching personnel is unlikely to substantially improve until the quality of managers improves."[105]

Appendix A: State Alternative Certification Programs[106] (Categories A–H are described on page 216)

	A	B	C	D	E	F	G	H
AL			●		●			
AK	●		●					●
AZ		●				●		
AR		●		●				
CA		●		●		●		●
CO	●							
CT	●							
DE					●		●	
DC		●						
FL				●				
GA	●			●	●	●	●	●
HI					●		●	
ID		●						
IL		●		●				
IN								
IA								
KS			●					
KY	●				●			
LA					●	●		
ME				●				
MD	●				●			
MA			●			●	●	
MI	●					●		
MN		●				●		
MS		●						
MO		●						
MT							●	
NE							●	
NV						●		
NH	●		●	●		●		●
NJ	●							
NM			●					●
NY				●	●		●	●
NC			●	●				
ND						●		
OH		●						
OK			●					
OR			●					

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	A	B	C	D	E	F	G	H
PA				●				
RI								
SC			●					
SD				●				
TN				●		●	●	
TX	●							
UT			●				●	●
VT			●			●	●	
VA	●							
WA	●	●						●
WV	●					●	●	
WI				●		●		
WY						●		

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Value-Added Assessment: An Accountability Revolution

J. E. Stone

Value-added assessment is a statistical tool for gauging how much students gain in academic achievement in a given year, i.e., how much "value" has been added to the youngsters by their schooling. By aggregating pupil gains by school, value-added assessment can be used to evaluate schools, regardless of differences among entering students. By aggregating scores by teacher, value-added assessment can be used to identify which teacher's students are learning the most and which teacher's students are learning the least. This provides an objective gauge of teacher effectiveness, replacing traditional modes of identifying good teachers via peer review or paper credentials. This report explores a new and sophisticated version of value-added assessment, developed by William Sanders at the University of Tennessee. The author concludes that value-added assessment is revolutionary because it enables parents, taxpayers, and policymakers to see how well schools are doing without penalizing those with many disadvantaged pupils, and it enables teachers to be evaluated based on the most important factor of all: their results.

Introduction

There is widespread agreement that teacher quality is critical to classroom success. A recent study by William Sanders and June Rivers found substantial differences in the achievement gains exhibited by students who have excellent teachers versus those who have ineffective ones.[1] The differences were large enough to shape decisively the subsequent academic careers of the students in question.

The teachers in the Sanders and Rivers study were all fully licensed, as are most teachers in public schools. Plainly, however, there were important differences in their effectiveness, and these differences were due to a variety of factors including their training, the resources of their school or school system, and their particular teaching methodology. Surprisingly, the impact of these factors on student learning has proven difficult to measure and is not well understood.

For example, there are few clear answers to the question of whether training in pedagogical methods prepares teachers to boost student achievement. The quality of teacher preparation has traditionally been assessed by reviewing inputs: whether the teacher scored well or poorly on entrance and licensure exams, whether the training program was fully accredited, whether the teacher had earned a master's degree, whether the teacher underwent specialized training for a particular teaching assignment, whether the teacher's training included certain courses and field experiences, whether the program was adequately staffed, and whether the institution hosting the program was adequately resourced. All of these indicators are presumed to predict how well a teacher can teach. However, the question of whether "well-prepared " teachers do a superior job of boosting student achievement has not been unambiguously answered by research.

Value-added assessment can be used to appraise fairly and accurately school and system performance regardless of differences among entering students.

Value-added assessment is a statistical tool that can provide an objective answer to questions of teacher effectiveness. Technically, it is a method of education data analysis that summarizes annual gains in student achievement. Applied to the aggregate scores of students taught by a given teacher, however, it becomes an indicator of teacher effectiveness—one based not on traditional input indicators such as training and experience but on demonstrated results, i.e., student learning. It is a measure of educational effectiveness that promises to revolutionize education.

Value-added assessment's use as an impartial and objective gauge of teacher effectiveness is not its only virtue. By comparing students' current achievement to their own past performance and aggregating learning gains by school or school system, value-added assessment can be used to appraise fairly and accurately school and system performance regardless of differences among entering students. In fact, it can be used as an objective performance indicator in judgments about matters ranging from teacher licensure, tenure, and merit pay to the effectiveness of curricular innovations and teacher training programs.[2]

The newest and most sophisticated version of value-added assessment was developed by Sanders at the University of Tennessee.[3] It has been used in Tennessee since the early nineties. A slightly different form of value-added assessment—one that uses a different type of statistical analysis—has been used since 1984 by the Dallas (TX) Independent School District.[4]

In both Tennessee and Texas, value-added assessment is currently used to assess school and teacher performance. Instead of judging school or teacher effectiveness on the basis of measures that may have little relationship to results, school board members, lawmakers, parents, and taxpayers in Dallas and in Tennessee can examine the results for themselves.

Value-Added Assessment in the Volunteer State

The Sanders and Rivers study examined value-added data drawn from the Tennessee Value-Added Assessment System (TVAAS). TVAAS is the heart of Tennessee's educational accountability system, and has been in use since the late 1980s. Since 1995, it has been enlarged to produce value-added teacher effectiveness data for review by principals and other school system personnel.

Tennessee tests all its students annually in grades 3-8 with a customized version of McGraw-Hill's Terra Nova instrument. Tennessee's testing program is called the Tennessee Comprehensive Assessment Program (TCAP) and the results are used to inform students, parents, and teachers about individual pupil achievement. The Tennessee Value-Added Assessment System (TVAAS) produces annual reports of the aggregate student achievement gains produced by each Tennessee teacher, school, and school system. The reports for school systems are broken down by school and grade for each of the five subjects measured by the TCAP exam (math, science, reading, language, and social studies).

Compared to other methodologies for computing pupil achievement gains, mixed model analysis is more precise and less vulnerable to manipulations that can distort results.

TVAAS reports express achievement gains in scale score points and in the form of comparisons with national, state, and district averages. For example, twenty-five points is a typical gain in student math achievement produced in fourth grade by Tennessee schools. The average gain in math produced in fourth grade by schools nationally is twenty-six points. Therefore, the typical Tennessee school is producing gains in fourth-grade math equal to 96 percent of the national average. In fourth-grade science, by contrast, Tennessee schools are producing gains equal to 115 percent of the national average.

For comparisons on which accountability decisions are made, a three-year rolling average is used to assure statistical stability. For example, Washington County's Boones Creek Middle School produced a three-year average gain (1993-95) of sixty-five scale score points in language arts for grades 5-8. The national average gain in language arts for grades 5-8 is fifty points. Thus, Boones Creek Middle school produced gains equivalent to 130 percent of the national average language arts gains.

The TVAAS reports for individual teachers aggregate the gains earned by all students for which a teacher was responsible and compare them to national, state, and local averages. Instead of stating teacher performance as a percentage of the various benchmark averages, teacher averages are classified as "above the norm," "below the norm," or "not detectably different" from the norm. An example of a TVAAS "Teacher Report" is provided in Appendix 1.

The statistical analysis employed in Tennessee's value-added assessment is an advanced form of "analysis of variance" known as Henderson's "mixed model." It is described in "The Tennessee Value Added Assessment System" by Sanders, Saxton, and Horn and in several other sources.[5] It produces a "best linear unbiased estimate" of the influence on annual student achievement gains attributable to teachers, schools, and school systems.[6]

Compared to other methodologies for computing pupil achievement gains, mixed model analysis is more precise and less vulnerable to manipulations that can distort results. For example, the hierarchical linear regression analysis used in Dallas, TX can exaggerate the differences attributable to a factor such as funding and correspondingly underestimate the differences attributable to teaching effectiveness if a variable such as per-pupil spending is prematurely entered into the statistical adjustment of student gains.

Preconditions

Value-added assessment is statistically robust but the validity of its results depends on certain preconditions. At a minimum, it requires annual testing of students in all grades with a reliable and valid achievement test. Portfolio assessment and other forms of assessment that lack reliability and objectivity will not suffice. Neither will standardized-achievement tests that have been revised to enhance their marketability to educators at the expense of diminished academic content. No amount of analysis can transform the substance and meaning of fundamentally flawed data. Perhaps this limitation is best expressed in the statistician's time-honored adage "Garbage in, garbage out."

Yet nothing in the use of value-added assessment precludes teachers from also using portfolios or any other form of assessment they favor. Most educators believe that schooling should serve aims beyond those that can be measured by achievement tests, and so they prefer a variety of assessments. Parents and the public are not necessarily opposed to these broader aims, but they do disagree with the vast majority of educators about priorities. Whereas educators typically view measured academic achievement as only one outcome among many, parents, taxpayers, and policymakers view it as the indispensable core of student (and teacher) results. No matter what other benefits good schooling may produce, those who fund schools and enroll their children in them will not be satisfied if the gains shown on objectively measured academic achievement are insufficient. Like an annual audit conducted by an external auditor, value-added assessment is an objective means whereby the public can see whether its priorities are being respected and its hopes fulfilled.

In addition to requiring the annual use of a valid and reliable achievement test, value-added assessment requires that the items used in each test cycle be fresh, non-redundant, and tied to an underlying scale. The forms used at each grade level must include a sufficiently wide range of items such that "ceiling" and "floor" effects are highly unlikely. Also, scores must be reported on a common scale that spans the range of grades for which the test is appropriate.

The purpose of these requirements is to ensure that the effectiveness of teachers, schools, and systems is tracked yearly, measured in understandable terms, and not artificially limited by the assessment process itself. In particular, the use of fresh test items insures that the gains calculated from value-added assessment represent student progress along the full spectrum of curricular objectives and not just improvements in the material sampled by the test.

Empirical studies of value-added assessment have demonstrated that it does remove differences among students and thereby levels the playing field for teachers, schools, and systems.

In order to ensure fair assessments of teachers, Tennessee's value-added assessment reports include only those pupils who have attended school for at least 150 days and are not eligible for special education services. (Special education students are assessed through their own "individual education plans.") For teachers who have taught a given student for less than a full year, only those students who have been the teacher's responsibility for more than seventy-five days are counted. Teachers whose subjects are not covered by the annual achievement examinations (e.g., art and music) are not assessed by value-added indicators.

Advantages

Tennessee's value-added assessment offers six important advantages when compared to other forms of educational accountability.

1. It expresses teacher, school, and school system effectiveness in terms of increases in achievement over previous performance. Each student is compared to his or her own record over a period of several years. By contrast, most present-day education accountability systems assess effectiveness by comparing current student achievement to an average or to an arbitrarily set criterion level. The failure of education accountability systems to consider gains relative to previous achievement can result in misleadingly negative evaluations for educators who are producing substantial but insufficient gains with disadvantaged students or misleadingly positive evaluations of educators who are producing mediocre gains with talented and advantaged students.
2. It excludes from the estimates of teacher, school, and school system effectiveness the influence of preexisting differences among students. These include race, socioeconomic status, previous learning, intelligence, and other factors, known and unknown, that have influenced previous achievement. In contrast to "regression analysis" approaches, Tennessee's "mixed model" approach employs statistical "blocking" to remove the contribution of suspected biasing influences. Blocking has the advantage of removing differences without the necessity of measuring and computing the magnitude of each of the excluded factors.

As counterintuitive as the notion of deleting differences may seem, empirical studies of value-added assessment have demonstrated that it does remove differences among students and thereby levels the playing field for teachers, schools, and systems. Statistical analyses of Tennessee's value-added scores have shown no relationship between annual gains and previous achievement, race, eligibility for free or reduced lunch, or any other of a variety of potentially biasing differences among students.[7]

Although value-added assessment removes preexisting differences, these are not the only factors beyond an educator's control that can influence student gains. Neither mixed-model analysis nor any other means of education gain assessment automatically removes the effects that might result from "exogenous" influences arising during the course of the school year. For example, student illness or a natural disaster might adversely affect a student's achievement, just as improvements in family income or the introduction of better community health care might contribute positively.

The influence of exogenous variables can and must be considered—especially as they impact a given school year—and mixed model I methodology is able to incorporate such considerations. Happily, however, value-added analysis, properly interpreted, minimizes the need to do so. First, data are averaged over a period of years (permitting positive and negative influences to counterbalance each other) and, second, the gains of teachers, schools, and systems can be compared to the gains of other teachers, schools, and systems that have been exposed to the same or similar influences.

3. Mixed model value-added assessment is able to isolate the achievement effects produced by an individual teacher so long as students have had that teacher for at least seventy-five days per semester. As a result, it is possible to assess teaching effectiveness regardless of whether teaching has been undertaken on a departmental basis, a team basis, or a traditional self-contained classroom basis.
4. The influence of a given teacher on student gains is expressed in the form of a "shrunken" or "regressed" estimate, i.e., an estimate that guards against an unfair assessment. In other words, the value-added system takes a very conservative approach to assessing teacher impact and thus ensures that those who are identified as effective or ineffective are deserving of their classification.
5. Value-added assessment using mixed-model methodology makes use of all student scores despite the fact that some students will have missed tests and have incomplete data. By contrast, methodologies such as regression analysis exclude students for whom complete data is lacking and thus typically remove substantial numbers of students when analyses span four or five years. Because poorer-performing students are often most apt to miss tests, the exclusion of such students can substantially inflate achievement gain estimates.

6. As described above, value-added assessment permits comparisons to national average gains of all enrolled students and thus provides an understandable measure of student progress. However, a caveat must be added. Gain scores depict how well students are progressing beyond their previous skills and knowledge but do not show how they stand with respect to an external benchmark of attainment, i.e., a national norm or state criterion referenced standard. For this reason, comparison to national average gains is not a sufficient basis for judging education outcomes. A complete assessment requires consideration of both value-added performance and performance referenced to an external standard. Tennessee's value-added reports, for example, are concerned primarily with average student gains and the comparison of those gains to national averages. But TVAAS reports also include average levels of achievement and appropriate national norms against which these may be judged.

   An alternative to Tennessee's reporting system is one in which the annual learning gains produced by a given teacher, school, or system are compared to the gain necessary to bring students to an externally referenced benchmark. Although not currently used by any state, such a report would make it possible to consider both indicators simultaneously.
   For example, a school system with a substantial number of disadvantaged students might need to produce learning gains equal to 110 percent of the national average annual gains in order to reach national grade level standards by the eighth grade.

Now schools can produce a balance sheet and report an objective bottom line that is understandable to the interested citizen.

Conclusion

Although it employs complex statistics, value-added assessment creates a simple but enormously important change in the educational landscape. It enables parents, taxpayers, and education decision-makers to see for themselves whether schools are working. It does so by greatly simplifying the process of interpreting reports on school effectiveness. Of course, it also provides a means of assessing teacher quality and, potentially, of the programs that train teachers.

Value-added assessment holds the promise to revolutionize education. The public has been flooded with information about school and teacher quality, but making sense of it has required experts; and most of the experts have been educators who work for or with the schools. Now schools can produce a balance sheet and report an objective bottom line that is understandable to the interested citizen. The next step is to free up the system so that resources and students can flow to the most effective schools and the best teachers.

Appendix I: Sample Value-Added Report

The following sample report summarizes the value-added learning gains of the students taught by a single (unnamed) teacher for one year. Under current Tennessee law, it is sent to the teacher, with copies going to the school principal and the system superintendent.

The TVAAS reports that are provided to the public and to the media for school and school system accountability are not shown here.

For each of the five subjects tested by the annual TCAP exam (math, reading, language, social studies, and science), the report shows the average gain earned by students nationally (U.S.A. Norm Gain), the average gain earned by students in the school system (System Gain), the average gain earned by students in Tennessee (State Mean Gain), and the gain earned by this teacher's students in each of the last three years (i.e., 1995, 1996, and 1997). The gains are accompanied by the standard error of measurement associated with each score (in parentheses). For example, the average gain in reading earned by students nationally was 21, by students in Tennessee 20.4, and by students taught by this teacher 24 in 1995., 28.5 in 1996, and 18.7 in 1997. This teacher produced gains greater than the national average in 1995 and 1996 but less than the national average in 1997. A separate row of scores shows the average gain in each subject for the most recent three years. This teacher's students gained 23.7 points on average in reading over the last three years.

In the area below the numerical report, the three-year average gains in each subject are compared with national, state, and systemwide average gains. Differences between the gains earned by this teacher and relevant averages are designated as NDD (not detectably different) if they are separated by less than two standard errors of measurement—a very conservative estimate of difference. Most of the gains produced by this teacher are marked as NDD; the gains she produced are within two standard errors of the average gains for the state and the system.

The bar graph at the bottom of the report displays the relationship of this teacher's gains to the same national, state, and system averages.

1997 TVAAS Teacher Report

Teacher: XXXXXXXXXXXXXX (000000000) ** TEACHER COPY ***
System: XXXXXXXXXXXXXX (000)
School: XXXXXXXXXXXXXX (000)
Grade: 4

Estimated Mean Gains and (in parentheses) their Standard Errors

	Math	Reading	Language	Soc. St.	Science
USA Norm Gain:	26.0	21.0	11.0	22.0	19.0
State Mean Gain:	25.0	20.4	19.3	21.4	21.4
1995 Teacher Gain:	22.7 (6.8)	24.0 (3.8)	22.3 (4.2)	30.6 (4.9)	28.3 (4.1)
1995 System Gain:	12.3 (2.9)	22.5 (3.4)	19.8 (3.0)	27.9 (3.8)	27.5 (3.1)
1996 Teacher Gain:	33.3 (4.9)	28.5 (4.0)	28.4 (3.8)	18.3 (5.8)	26.8 (4.0)
1996 System Gain:	32.6 (3.0)	28.6 (3.6)	29.5 (3.2)	17.4 (4.0)	28.3 (3.3)
1997 Teacher Gain:	15.6 (5.7)	18.7 (4.9)	17.8 (4.9)	17.9 (5.7)	25.6 (4.5)
1997 System Gain:	16.3 (3.1)	19.1 (3.6)	16.0 (3.2)	18.1 (4.0)	26.1 (3.3)
Teacher 3-Yr-Avg:	23.9 (3.0)	23.7 (2.5)	22.8 (2.3)	22.3 (3.2)	26.9 (2.4)
System 3-Yr-Avg:	20.4 (1.7)	23.4 (2.0)	21.8 (1.8)	21.1 (2.3)	27.3 (1.9)

Teacher 3-Year-Average Gain Comparisons

Teacher vs Norm:	NDD from Norm	NDD from Norm	Above Norm	NDD from Norm	Above Norm
Teacher vs. State:	NDD from Mean	NDD from Mean	NDD from Mean	NDD from Mean	Above Mean
Teacher vs System:	NDD from Mean	NDD from Mean	NDD from Mean	NDD from Mean	NDD from Mean

Teacher 3-Year-Average Gain in Scale Score Units with Approximate 95% Confidence Intervals

```
          0                  10                  20                  30                  40                  50
          +.........+.........+.........+.........+.........+.........+.........+.........+.........+.........+
Math                                   (----L-----T-S-N-----)
Reading                                   (--SN--LT--------)
Language                     N          (--S--L-T--------)
Soc. St.                              (--------LS*--------)
Science                                   N     S (-----TL----------)
```

Legend: T = Teacher Gain, L = System (LEA) Mean Gain, S = State Mean Gain, N = National Norm Gain.
An asterisk (*) indicates that 2 or more of the above symbols coincide.

The estimated teacher gains presented here are the official TVAAS estimates from the statistical mixed model methodology which protects each teacher from misleading results caused by random occurrences. Each teacher's gain is assumed to be equal to the average gain for the district until the weight of the data pulls the estimate away from the district average.

This year's estimates of previous years' gains may have changed as a result of incorporating the most recent student data.

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Appendix 2: References

For the interested reader, there is a fairly extensive literature pertaining to value-added assessment. Although no one has yet written an account of mixed model methodology that is suitable for a general audience, it has been critically examined by a number of scholars and policy experts.

Perhaps more importantly, value-added assessment has been used successfully in Tennessee for nearly ten years, and many educators have learned how to interpret and make use of it. Some schools have used it to identify weaknesses and have, as a result, made phenomenal gains. Other schools—notably rural schools and schools with many disadvantaged students—have been able to show that they are doing a better job of teaching than had been evidenced by indicators such as expenditures and the use of the latest educational practices. On the whole, student achievement in Tennessee has been improving over the years that value-added assessment has been in place.

For a general description see:

J. Archer, "Putting 'Value Added' Data to Good Use," *Education Week*, 5 May 1998.

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W.L. Sanders and Horn, S. P. "The Tennessee Value-Added Assessment System (TVAAS) Mixed-model Methodology in Educational Assessment," *Journal of Personnel Evaluation in Education*, 8, no.1 (1994): 299-311.

For an evaluation and policy analysis see:

W. T. Gormley and D.L.Weimer, *Organizational Report Cards* (Cambridge: Harvard University Press, 1999)

For a comprehensive technical review see:

R.D. Bock and R. Wolfe, *Audit and Review of the Tennessee Value-Added Assessment System (TVAAS) Preliminary Report*, 23 January, 1996. (Available from the Tennessee Office of Education Accountability, Comptroller of the Treasury, State Capitol, Nashville, TN 37243-0260)

For sample value-added reports:

Tennessee Department of Education
6th Floor, Andrew Johnson Tower
710 James Robertson Parkway
Nashville TN 37243-0375
Phone (615) 741-2731
http://www.state.tn.us/education/rptcrd98/rcstudent.htm

For value-added reports in a consumer-friendly on-line display:

The *Tennessean* (Nashville)
http://www.tennessean.com/schools/

For technical information regarding value-added analysis and its implementation

Dr. William Sanders, Director
University of Tennessee Value-Added Research and Assessment Center
225 Morgan Hall, P. O. Box 1071
Knoxville, TN 37901
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[1] W.L. Sanders and J.C. Rivers, *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement*, 1996 (Available from UTVARC, 225 Morgan Hall, PO. Box 1071, Knoxville, TN 37901-1071).

[2] Although not currently used for this purpose, value-added assessment can provide an independent and objective indication of the quality of teacher training. By aggregating the value-added gains of novice teachers on a program-by-program basis, state policymakers would be able to determine which teacher-training programs are doing the best job of equipping teachers with the skills necessary to improve student achievement. Gains in learning aggregated by teacher-training institution would be a vastly superior indicator of program quality in comparison to indicators now used. Factors such as admission requirements, course offerings, faculty credentials, facilities, and the many other program characteristics now reviewed by state agencies are not demonstrably linked to teacher success in producing student achievement. A value-added indicator of program effectiveness would also be vastly superior to the so called "performance-based" indicators of teacher effectiveness that were recently proposed by the National Council for the Accreditation of Teacher Education. These indicators include items such as credits in educational methods courses, classroom demonstrations, and scores on tests of pedagogical knowledge. For the most part, they are at best weakly related to the primary phenomenon of interest, i.e., objectively measured student achievement.

[3] W.L. Sanders, A.M. Saxton, and S.P. Horn, "The Tennessee Value-Added Assessment System, A Quantitative, Outcomes-Based Approach to Educational Measurement" in *Grading Teachers, Grading Schools: Is Student Achievement a Valid Evaluation Measure?* ed. Jason Millman (Thousand Oaks, CA: Corwin Press, 1997), 137-162.

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[6] Of technical significance, value-added estimates of teacher influence are derived from a multi-year "layered" computational model and corrected by a "shrinkage estimate." These two features substantially reduce the possibility of false negative or false positive estimates and ensure that the resulting indicators of achievement gain are as exact as fairness will permit.

[7] University of Tennessee Value-Added Research and Assessment Center, *Graphical Summary of Educational Findings from the Tennessee Value-Added Assessment System (TVAAS)*, 1995. (Available from UTVARC, 225 Morgan Hall, P.O. Box 1071, Knoxville, TN 37901-1071.)

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